REGIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT (R-SEA)

METHODOLOGICAL GUIDANCE AND GOOD PRACTICE

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Foreword

This guidebook presents generic methodological and procedural guidance for undertaking 'good' regionally based strategic environmental assessment, herein referred to as R-SEA. In developing this guidebook, the intent is to facilitate a more proactive and integrated approach to strategic environmental assessment, and one that explicitly operates at the regional scale so as to facilitate the assessment of cumulative environmental effects.

The methodology presented in this guidebook builds on a foundation report prepared for the Canadian Council of Ministers of Environment, Environmental Assessment Task Group, titled "Strengthening the Foundation for Regional Strategic Environmental Assessment in Canada," which establishes the conceptual basis and rationale for advancing R-SEA in Canada.

The guidebook emphasis a number of important features to R-SEA that define its essence and offer improvements to the current state of regional, strategic, and cumulative effects assessment practices in Canada, including:

- deliberate tiering toward project EA
- explicit linkages to horizontal and higher tiers of planning and assessment
- a focus on regionally relevant VECs and indicators, including substantive indicator VECs
- a focus on regional drivers of change, including also external and emergent drivers
- futures-perspectives, emphasizing alternative means forward and scenario building
- consistent and persistent integration of cumulative effects considerations
- flexibility in methods and techniques
- feedback and learning both within the R-SEA process and post-implementation through follow-up

We make no assumptions as to whether the 'science' required to support R-SEA occurs inside the R-SEA process itself, or is developed externally and feeds into the R-SEA process. Rather, we simply assume that the necessary science will be available, or made available, to support R-SEA application and cumulative effects assessment processes.

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ACRONYMS

CEA	Cumulative Effects Assessment
CEAA	Canadian Environmental Assessment Act
EA	Environmental Assessment
EARP	Environmental Assessment Review Process
EATG	Environmental Assessment Task Group
EIA	Environmental Impact Assessment
IAIA	International Association for Impact Assessment
IEA	Institute of Environmental Assessment
IUCNNR	International Union for the Conservation of Nature and Natural Resources
MAEL	Maximum Allowable Effects Level
NEPA	National Environmental Policy Act
PPP	Policies, Plans and Programs
REA	Regional Environmental Assessment
R-SEA	Regional Strategic Environmental Assessment
SEA	Strategic Environmental Assessment
VEC	Valued Ecosystem Component

1.0 INTRODUCTION

First introduced to Canada in the early 1970s, EA has evolved considerably in its scope and tier of application. The focus of much discussion in recent years is the application of EA above the individual project, at the strategic tier of PPPs. The need for a more strategic form of EAin Canada evolved on at least three fronts: first, in recognition of the need to promote the development of more environmentally sensitive PPPs; second, in recognition of the need to focus and streamline project level assessments, making them more relevant to policies and programs by ensuring that development actions are set within a broader environmental framework; and third, due to concern about the capacity of project-level EA to effectively consider non-project impacts and in particular cumulative effects that occur beyond the scope and scale of the individual project.

The need to assess and manage the cumulative environmental effects of human activity is not a matter of debate. In Canada, CEA emerged in the early to mid-1980s as a priority of the Canadian Environmental Assessment Research Council. Federally and provincially, CEA is now an accepted part of most project-based EA frameworks and applications and, since 1995, CEAis mandatory in Canada for all EAs conducted under the *Canadian Environmental Assessment Act*. The *Act* requires that an EA consider "any cumulative effects that are likely to result from the project in combination with other projects that have been or will be carried out" (Canada 1995, s. 16 (1)). In doing so, CEA was viewed as a means to strengthen EA and fulfill its promise of facilitating the sustainable development of the environment.

Simply put, assessing the cumulative environmental effects of development makes good sense. The reality, however, is that the current practice ofEAin Canada is not effective at delivering CEA (Harriman and Noble 2008;Dubé 2003). In a recent critique of Canadian EA, Duinker and Greig (2006: 153) argue that "continuing the kinds and qualities of CEA currently undertaken in Canada is doing more harm than good." The practice ofCEA has been narrow, confined largely to project-by-project assessments, and divorced from the broader regional planning and strategic context (Harriman and Noble 2008). CEAof this nature is of little value to strategic decision-making and at odds with the pursuit of sustainable development.

There is now a collective understanding that CEA must go beyond the evaluation of site-specific, direct and indirect project impacts under the constraints of project EA to encompass also broader regional understandings and considerations of the sources of cumulative environmental change (e.g. Duinker and Greig 2006; Dalal-Clayton and Sadler 2005; Cooper 2003; Dubé 2003; Kennett 2002; Creasy 2002; Munkittrick et al. 2000). Procedurally, project-based EA is concerned about the most likely impacts resulting from a proposed development and finding ways to mitigate those impacts before they become a reality. Project-based EA is about project approval; it does not ask whether the proposed undertaking is the most appropriate form of development or whether the cumulative effects of such development are in conflict with broader regional environmental goals or desired future conditions.

Advancing CEA in Canada demands a more regional and strategic approach than what can be achieved through project-based EAapplications and frameworks. A regional approach to CEA allows for a better understanding of the relationships between environment and development, and provides an opportunity for a wider range of roles and stakes to be integrated in the decision making processes (João 2007; Cooper and Sheate 2004; Creasy 2002). This form of CEA, however, will not be achieved by expanding the scope of current project-based EAprinciples and practices to encompass broader regional scale considerations, as is implied by section 16.2 of

the *Canadian Environmental Assessment Act*; rather, it requires a new approach to CEA and one that is operationalized beyond the reach and tier of project-based EA.

Operating above the project tier and earlier in the planning process, SEAwas envisaged as having the potential to overcome the reactive nature of and difficulties associated with attempting to apply CEA solely at the project level by providing the planning-type framework and decision-making environment necessary within which cumulative effects are addressed in a much broader, more comprehensive and objectives-led context (Harriman and Noble 2008; Therivel 2004; Fischer 2002).

That being said, the integration of CEA into SEA, and even SEA itself, has been slow to evolve (Noble 2009a, 2008; Auditor General 2004). Plagued by what Sonntag et al. (1987: 4) refer to as the "constraints of tradition," methodological support and good practice guidance for SEA in Canada have not been forthcoming. Even less attention has been paid to the integration of CEA and SEA. In the words of Duinker and Greig (2006), what is required is a "revolution in how we undertake CEA, not an evolution."

1.1 Purpose

The purpose of this report is to provide a methodological framework and good-practice guidance for carrying out R-SEA.

1.2 Background

In response to the limitations to EA conducted solely at the project scale, the Canadian federal government through a federal regulatory improvement initiative, the Canadian Environmental Assessment Agency, and the Canadian Council of Ministers of Environment,along with various provincial partners, has specifically identified R-SEA as a concept warranting further consideration and development. An inherently proactive approach, R-SEAis a means to ensure that planning and assessment occurs within the context of *desired* rather than the most likely outcomes.

In particular, R-SEA is viewed as a means to address the cumulative effects of multiple initiatives within a region, including induced development, thereby providing an alternative forum to debate broader policy issues and having the potential to streamline subsequent project-based EA and regulatory decision-making processes. The Canadian Council of Ministers of the Environment has also identified R-SEA as one of four priority areas to be addressed in the overall workplan for the newly established Environmental Assessment Task Group (EATG).

In February 2008, the EATG commissioned a report "Strengthening the Foundation for Regional Strategic Environmental Assessment in Canada." The report (see Noble and Harriman 2008) establishes a conceptual foundation for and the principles of regionally based SEA, referred to as R-SEA. The overall purpose of this report was to foster a common understanding of R-SEA at the federal level and across Canadian provincial jurisdictions, and to lay a foundation for the development of a methodological framework and good-practice guidance for undertaking R-SEA.

Why propose R-SEA at this time? The current state-of-practice of EA in Canada demands it. SEA has been slow to evolve, and is often perceived as a 'new layer' of assessment that simply 'must be done' in compliance with the Directive; the value added of SEA in Canada has not been fully realized (Noble 2009a). Further, understanding cumulative effects at broader regional scales is a prerequisite to ensuring the sustainable development of the environment; however, CEA is currently constrained by project-based EA approaches. Discussions about SEA and CEA have been the focus of attention in Canadian EA for the last decade, but there has been only limited progress in the development of integrative and supporting frameworks for their application. As PPPs become increasingly sensitive to sustainability needs, and as the federal and provincial governments are more open to new and innovative approaches to EA in Canada, the timing is right to set a foundation for the development of R-SEA as a means to support improved strategic initiatives and PPP development and decision-making.

The intent in developing R-SEAis not to add another layer of EA in Canada, but to provide a methodology for truly integrative EA in support of strategic planning and decision-making in a regional context. A methodology is a higher-order activity—a framework or structure for organizing a process, a way by which SEA is performed, a system of conduct, a series of systematic steps (Noble and Storey 2001). In this regard, R-SEA is not to be viewed as an 'add-on' to the current array of EA requirements, neither is it a return to the EARP-type area-wide reviews of the early 1980s. Rather,R-SEA is a methodology and a decision support framework to facilitate the integration of CEA in the development and deployment of regionally based strategic initiatives and PPP development.

More specifically, R-SEA is promoted as a means to: facilitate the development of better regional PPPs and strategic initiatives; provide a broader, regional focus for development and decision-making; ensure that CEA operates at the appropriate tier and scale; facilitate data sharing and transparency in state of the region environment monitoring and reporting; enable project-based performance assessment against the broader goals, indicators, and targets established by an R-SEA; and provide an early indication to development proponents of the level of public interest and primary issues and concerns in a development region.

1.3 Basic Terminology

Terminology surrounding strategic approaches to EA is far from resolved. Confusion remains over a number of basic principles, including SEA and other regional-focused assessment and environmental study concepts. So as to ensure clarity in the nature of R-SEA, and to facilitate consistency in its interpretation, the following terminology is adopted in this report:

Cumulative Effects Assessment
The process of systematically analyzing cumulative environmental change or the total effects on a valued ecosystem component.

Cumulative Environmental Effects
Effects of an additive, interactive, or synergistic nature that accumulate over space and time.

Environment
Consistent with the Bellagio Principles of sustainable development, environment in this document adopts a holistic perspective and includes the biophysical and the human environment and their component interactions.

Environmental Assessment
A generic term that is often used interchangeably as a qualifier for specific types of impact assessment, such as 'project-based' environmental assessment or 'strategic-based' environmental assessment.

Environmental Impact Assessment
The process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made. Environmental Impact Assessment is focused on project-based proposals and undertakings.

Methodological Framework
A methodology is a higher-order activity—a framework or structure for organizing a process, a way by which SEA is performed, a system of conduct, a series of systematic steps.

Project
For the purpose this document, 'project' refers to physical actions, development activities, or physical works on the landscape as per the definition of 'project' under the Canadian Environmental Assessment Act and consistent with the notion of a hierarchy of policies, plans, programs, and projects.In some provincial jurisdictions the definition of 'project' includes plans and programs.

Regional Strategic Environmental Assessment
A process designed to systematically assess the potential environmental effects, including cumulative effects, of alternative strategic initiatives, plans, or programs for a region.

Strategic Environmental Assessment
The systematic process of evaluating the potential environmental effects of proposed or existing policies, plans, and programs and their alternatives.

Valued Ecosystem Components
Components of the environment that are identified as important ecologically, socially, or economically and are the focus of attention in environmental assessment

1.4 R-SEA Triggers and Applications

Under section 2.2.2 of the Cabinet Directive on SEA, the triggers for SEA include two conditions: i) a proposal is submitted to an individual minister or Cabinet for approval; and ii) implementation of the proposal may result in important environmental effects, either positive or negative. In principle, under section 2.1.1, one of the guiding principles for applying the Cabinet Directive is early integration: "The analysis of environmental considerations should be fully integrated into the development of a policy, plan or program...early in the conceptual planning stages" (Canada 2004). In practice, however, the triggers or expectations for SEA under section 2.2.2 imply PPP validation.

There are two broad classifications of triggers for strategic-level EA: a PPP or strategic initiative is proposed and requires validation via assessment; or a PPP or strategic direction is needed and an assessment is required to facilitate the development of that PPP or strategic initiative. It is the second class of triggers that demands a more integrated approach to the

formulation of PPPs and strategic initiatives, and is the fundamental trigger for R-SEA. The result is an assessment process that informs the development and appraisal of the possible implications of, and preferences for, PPPs and strategicinitiatives so as to generate results that are both socially meaningful and operationally relevant for strategic decision support (Vicente and Partidário 2006). Triggers for R-SEA will need to reflect this.

This guide does not prescribe specific triggers for R-SEA, as such triggers are specific to the jurisdictions adopting R-SEA. However, a hybrid screening approach is recommended (see von Seht 1999) whereby criteria are identified by describing the conditions under which an R-SEA should be implemented, and supplemented by a generic list of the 'types' of strategic initiatives that would benefit from R-SEA.

As a proposed set of screening criteria, R-SEA would be triggered under the following circumstances:

i. A strategic decision is to be made that will establish a framework and conditions for future development, land use, or management actions in a region.

ii. There is a proposal to develop a regional plan or strategy concerning resource use, resource allocation, conservation or development.

iii. There is an application for development in a previously undeveloped region and for which no current regional plan or strategy exists.

iv. There is an application for development in an already developed region, for which no current regional plan or strategy exists, and that development has the potential to instigate or significantly influence regional cumulative effects processes.

v. There is a noticed decline in the key natural resources or ecological functioning of a region.

vi. There is a need to coordinate disparate regional resources, programs, data, management objectives, strategic initiatives in relation to a common regional issue.

vii. Regional decisions are to be made concerning resource use, development, or land access that is multi-jurisdictional or multi-sectoral in nature. -12-

viii. The public demands that an R-SEA be carried out.

Based on these criteria, examples of types of initiatives when R-SEA might apply include the development of strategies and PPPs associated with the following:

- Marine and coastal zone planning
- Integrated land use planning
- Urban and core area planning
- Conservation and protected areas planning
- Watershed management
- Regional energy strategies and initiatives.

Concerning the above criteria and examples of the types of applications:

i) R-SEA is not limited to regions that have not been previously developed. If this were the case, R-SEA would be very limited in the geography of its use. The level and extent of pre-existing development when an R-SEA is triggered simply establishes the nature of the environmental baseline against which impacts are assessment, alternatives developed, and decision made.

ii) R-SEA is not intended to be an 'every-day' appraisal tool – other tools are available to fulfill this purpose. Rather, R-SEA is intended to guide the development of PPPs and strategic initiatives, including CEA application above the project tier, and is likely to be reserved for fairly significant and complex regional planning and strategic decision making contexts. That being said, the extent of time and resources an R-SEA demands will depend in large part on the nature of the region, including such issues as the level of public interest, sensitivity of the biophysical and socio-economic environment in question, and the availability of baseline information. In this regard, R-SEA methodology is flexible and adaptive to the specific content within which it is being applied, and can be played out in a largely data-driven or expert-based assessment environment.

1.5 Scope and Structure of the Guide

This guide is designed primarily for environmental decision makers and practitioners who work within or for the public sector and at the regional level. It will also be useful to those with a general interest or stake in regional planning, development and decision making including industry, Aboriginal groups, and local governments. The intent is that the framework can be applied to a variety of environmental decision-making and strategic initiatives.

The guide presents a R-SEA methodology, highlighting its *strategic*characteristics and principles, and providing methodological support for good-practice. The guide does not focus on particular methods or techniques, as these are not specific to R-SEA but readily available from existing EA-related tools and practices and must be tailored to the specific R-SEA context, data type, and application.By adopting this guide, and deploying the methodological framework, structured thinking can be applied to endeavors that are often complex in nature, and characterized by processes that may be conflict-ridden, inefficient, or ineffective.

The guide is presented in five sections. Section 2 provides a brief background to SEA and establishes the strategic foundation for R-SEA. In Section 3 the concept of R-SEA is introduced, including its guiding and methodological principles. The core of the guidebook, a methodological framework and good-practice guidance for R-SEA, is presented in Section 4. Guidance on documentation and reporting is included in Section 5.

2.0 BACKGROUND: TOWARD A MORE STRATEGIC APPROACH TO ENVIRONMENTAL ASSESSMENT

Strategic and project-based approaches to EA share a common root – they are both concerned with impact assessment, but they have very different foci: strategies for future development characterized by a high level of uncertainty, versus proposals and measures that are concrete and objective for the execution of projects (Partidário 2007a) (Table 1). Key to understanding this difference is understanding the concept of 'strategic' in EA.

'Strategic' in EA cannot simply be explained in terms of its tier of application - above the project level (Partidario 2000), but rather by the relationship between impact assessment and the broader planning process (Bina 2007), and by the types of questions being asked (Noble 2000). 'Strategic' means relating to or concerned with 'strategy' and is derived from the Greek*strategos*, meaning that which has to do with determining the basic objectives and finding the means to achieve them. 'Strategy,' from the Greek *strategia*, means generalship. As Mintzberg (1994) describes, strategy is a 'how'–a means of getting from here to there; a pattern of actions; a vision or direction. In other words, "strategic" involves the process of defining goals or visions in terms of the desirable (and feasible) principles to be established, proposing alternative possibilities for achieving them, and selecting the most desirable approach (Noble 2000).

A strategic approach to EA offers a foundation on which to base environmental decision-making, and ensures the full consideration of alternative options at an early stage at a point where there is greater flexibility with respect to decisions. Thus, strategic EA is proactive, asking "what is the preferred option?" and "what is the preferred attainable end(s)?" rather than predicting the most likely outcomes of a predetermined type of action. However, the label 'strategic' is too often indiscriminately used in an attempt to add importance or significance to EA procedures(see Bina 2007).

The formal use of the term 'strategic' EA, or SEA, first appeared in 1989(see Partidário 2007b), when Wood and Djeddoursuggested:

> The environmental assessments appropriate to policies, plans and programmes are of a more strategic nature than those applicable to individual projects and are likely to differ from them in several important respects.... We have adopted the term 'strategic environmental assessment' (SEA) to describe this type of assessment (Wood and Djeddour 1989).

However, the notion of a 'strategic' EA is often tied to developments as early as the US NEPA of 1969. Internationally, EA above the project level only started to gain momentum in 1980 when the *World Conservation Strategy* identified the need to integrate environmental considerations with development plans (IUCNNR 1980) and, subsequently, in 1987 the early consideration of the environmental implications of PPPs became an accepted part of World Bank policy. The *Brundtland Report* in 1987 and the United NationsEarth Summit in Rio in 1992 further echoed the need to address environmental issues above the project level as an essential prerequisite for the sustainable development of the environment.

Table 1. Basic characteristics of strategic and non-strategic approaches to EA

Strategic (e.g. SEA)	*Non-strategic (e.g. project EIA)*
Adopts a strategic and long-term perspective	The focus is on the execution of a prescribed action with a short-or medium–term perspective
Focuses on identifying a strategy for action and the means to accomplish goals and objectives	Focuses on implementing a pre-determined action, to bring closure
Attempts to build a desirable future, not to "know the future"	The intervention is known and emphasis is on predicting the outcomes
Asks "what is the preferred option?"	Asks "what are the impacts of the proposed option and how can they be mitigated?"
Focuses on alternative options and broad scenarios of development	Focuses on option alternatives and the proposed development scenario
Operates at the level of PPPs and often abstract strategies	Operates at the level of projects and concrete development proposals
Accepts that the strategy or PPP will change due to changing contexts and uncertainties	Attempts to minimize uncertainty so as to remain consistent with the original proposal

Source: Based on Partidário (2007a) and Noble (2000)

2.1 Strategic Environmental Assessment in Canada

The notion of a higher-order, and more strategic form of EA is well received, and the concept itself has gained considerable attention in recent years. That being said, and notwithstanding the both Canadian and international Directives and guidance for strategic SEA, there is no real consensus on definition or procedure (Fischer and Seaton 2002). While SEA is generally acknowledged to involve the early consideration of environmental issues in PPP decision-making, there is no single definition and SEAis variably defined as:

> The systematic and comprehensive process of evaluating at the earliest possible stage the environmental effects of a policy, plan or program and its alternatives (Thérivel and Partidário 1996).
>
> A systematic process for evaluating the environmental consequences of proposed policies, plans or programmes initiatives in order to ensure they are fully included and appropriately addressed at the earliest appropriate stage of decision making on par with economic and social considerations (Sadler and Verheem 1996).
>
> The proactive assessment of alternatives to proposed or existing PPPs, in the context of a broader vision, set of goals, or objectives to assess the likely outcomes of various means to select the best alternative(s) to reach desired ends (Noble 2000).

> A systematic, on-going process for evaluating, at the earliest possible stage of publicly accountable decision-making, the environmental quality, and consequences, of alternative visions and development intentions incorporated in policy, planning, or program initiatives, ensuring full integration of relevant biophysical, economic, social and political considerations (Partidario and Clark 2000).
>
> A decision support tool, designed to integrate environmental and social issues into higher-order PPP decision making processes, bringing together different aspects of problems, different perspectives, and providing possible solutions in an accessible form to the decision maker (Sheate et al. 2003).

Canada's commitment to a more strategic form of EA can be traced back to the EARP Guidelines Order of 1984, which defined a *proposal* to include any initiative, undertaking or activity for which the Government of Canada has a decision-making responsibility. Under the Guidelines Order the reach of EAextended well beyondthe individual project and encompassed also broader regional, conceptual, and policy-level reviews (Sadler 2005). Early strategic forms of impact assessment, such as the Mackenzie Valley Pipeline inquiry (1974-1977), the Beaufort Sea hydrocarbon review (1982-1984), and the Atomic Energy of Canada Limited's nuclear fuel waste management concept (1988-1994), were deployed as area-wide reviews, public review panels, and concept-based assessments. Although none of these early assessments were formally recognized as SEA, they offered much to the future of SEA development in Canada (Noble 2009a)

It was not until 1990that SEA was formally established in Canada, by way of a federal Cabinet Directive and as a separate process from EIA, requiring federal government departments and agencies to consider environmental concerns at the strategic level of PPPs. This was the "first of the new generation of SEA systems that evolved in the 1990s" (Dalal-Clayton and Sadler 2005: 61). Procedural guidance for SEA was provided in *The Environmental Assessment Process for Policy and Programme Proposals* (FEARO 1993).

In 1992,the *Canadian Environmental Assessment Act*(*CEAA*) was introduced to replace EARP, and become law in 1995. The move to *CEAA* was in response to several shortcomings in EA including variability in application and projects being developed prior to an EIA commencing, and was intended to make impact assessment more rigorous. However, under the new *CEAA*impact assessment was restrictedto 'projects' or physical works, meaning that plan and policy decisions would no longer be subject to a formal impact assessment.

In 1999, after a decade of increased attention to sustainability issues in policy and planning, Canada reinforced its commitment to SEAwith the *1999 Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals,* recently updated in 2004.Outside the federal process, however, SEA is still practiced largely on an ad hoc basis and there remains only limited knowledge of the diverse nature and scope of SEA and the value added to PPP decisions (Noble 2009a; Auditor General 2004; Noble 2004).

Provincially, no formal system of SEAexists that is comparable to that of the federal Directive and provisions for any form of PPP assessment varies by jurisdiction. In Alberta and Prince Edward Island, for example, existing EA legislation does not require or provide for the higher-order PPPassessment. In Newfoundland, PPP assessment is directed through Cabinet submissions; however, there is no formal provision for SEA under existing legislation. Policies and plans were once included under EA regulations in Newfoundland, but in 1995 reforms to the environmental

assessment process excluded policies and plans from EA legislation. British Columbia, New Brunswick, Nova Scotia, and Ontario all provide for PPP assessment to varying degrees. In Ontario, for example, section 3, Chapter E.18, 1990 'Application of the Act' (the Ontario *Environmental Assessment Act*) defines the scope of EAto include enterprises or activities or proposals, plans, or programs.There are no specific provisions for SEA in Saskatchewan, but there is a formal, legislative requirement for higher-order assessment in the forestry sector, and the definition of 'project' under *The Saskatchewan Environmental Assessment Act*does not exclude the application of EA at the planning tier for any sector or context.

2.2 Opportunities and Benefits of a Strategic Approach

The potential opportunities and benefits of a more strategic approach to EA are many and varied. Stinchcombe and Gibson (2001), for example, present a long list of the objectives that could be obtained in implementing SEA. Other authors, including the Canadian SEA Directive, echo many these objectives and potential benefits. Partidário (2007a) summarizes the broad opportunities and benefits of SEA concisely in a guidance document prepared for the Portuguese Environment Agency, suggesting that SEA can:

- contribute to an environmental and sustainable decision-making process;
- improve the overall quality of policies, plans and programs;
- strengthen and facilitate project-based EIA; and
- foster new means of making decisions about development.

Perhaps one of the most promising features a more strategic approach to EA, in principle, is the opportunity to consider potential cumulative environmental effects beyond the project tier (Therivel and Ross 2007; Therivel 2004; Fischer 2002; Noble 2000). In practice, however, the benefits of a more strategic approach to CEA have not been fully realized (Cooper and Sheate 2004). Several authors, including the SEA Directive, promote SEA as a means to better CEA; however, the methodological guidance on how to accomplish this has not been forthcoming (Noble 2009a). In part, this is due to continued confusion around the practice of CEA – particularly at the strategic tier (e.g. Harriman and Noble 2008; Baxter et al. 2001; Piper 2001). At the surface, the application of a CEA above and beyond the scope and scale of the individual development project appears to be a relatively simple concept. Problems emerge, however, when attempting to advance this form of CEA in the absence of a regionally based, SEA framework. The relatively few Canadian examples of SEA application itself (see Noble 2009b), speaks to the complexity and subtleties of operationalizing the concept (McCarthy et al. 2008).

3.0 REGIONAL STRATEGIC ENVIRONMENTAL ASSESSMENT

It is generally accepted that 'good' CEA demands a regional approach (Harriman and Noble 2008; Duinker and Greig 2006; Creasy 2002; Hegmann et al. 1999). However, an increase in assessment scale from the individual project to the region is itself insufficient to ensure an understanding of the sources or drivers of cumulative change and to proactively manage regional land use and cumulative environmental effects.

Adopting a regional approach to CEArequires more than simply expanding the assessment boundaries to encompass a broader geographic area; it represents a different way of approaching the interrelationships between environment and development (Noble 2008). Many regional-based CEA initiatives have occurred in Canada, but each characteristically lacks a clear strategic direction(Noble 2008). The result is a form of regional CEAthat defaults to individual stressor-based impact assessment processes; or is focused on describing the current state of the environment or system response to past or existing land use pressures, rather than also on projecting trends, scenario building, and discerning desirable futures (Quinn et al. 2002; Noble 2005; Duinker and Greig 2006).

SEA enables regionalCEA to occur beyond the constraints of project-based thinking,in order to address the nature and underlying sources of cumulative change and to identify desirable futures and outcomes. Having such a strategic framework in place is critical to ensuring an effective regional CEA process.Based on the direction of the Major Projects Management Office, working with the Canadian Environmental Assessment Agency and other federal partners, this strategic framework, designed to integrate regional CEA with the principles of SEA, is conceptualized in "Strengthening the Foundation for Regional Strategic Environmental Assessment in Canada" (see Noble and Harriman 2008)in the form ofR-SEA.

3.1 Definition and Scope

In order to support a more spatially relevant and strategically oriented framework for environmental assessment, this document presents a re-conceptualization of the relationship between the assessment of cumulative environmental effects in a region and strategic environmental assessment.

Based on merging the principles of regional cumulative effects assessment and strategic environmental assessment, Regional Strategic Environmental Assessment (R-SEA)is defined as:

> *a process designed to systematically assess the potential environmental effects, including cumulative effects, of alternative strategic initiatives, policies, plans, or programs for a particular region.*
>
> Source: "Strengthening the Foundation for Regional Strategic Environmental Assessment in Canada" (Noble and Harriman 2008)

R-SEA is more than simply expanding the boundaries of impact assessment to en-compass a broader geographic area; it represents a different way of approaching the interrelationships between environment and development decision-making.Inherent to R-SEA is thatthe assessment of cumulative effects is not an add-on component, but rather fully integrated into the assessment and decision-support process.R-SEA is about informing the development of strategic initiatives,policies, plans or programs for a region, and thereby facilitating an opportunity for

more informed and efficient downstream project-based environmental impact assessment and regional environmental management initiatives. Emphasis is on ensuring the sustainability of a region and a desired level of environmental or socioeconomic quality, rather than solely on impact mitigation.

R-SEAallows for an early, overall analysis of the relationships between alternative futures for a region and the potential cumulative environmental effects that may emerge from those futures.It is designed to systematically evaluate the cumulative effects of multi-sector land uses and surface disturbances under different future scenarios. The focus is on creating images of the future state of development, natural change, and cumulative change in a region, asking "what if" questions concerning alternative development options.The focus is on *informing* the development or evaluation of alternative strategic policies, plans, or programs for a region and then comparing those alternatives based on their potential for cumulative environmental change, and in consideration of various socio-economic, environmental, and planning objectives.

The overall objective of R-SEAis:

> *to inform the preparation of a preferred development strategy and environmental management framework for a region.*

In this regard,R-SEAis intended to:

- improve the management of cumulative environmental effects;
- increase the effectiveness of project-level environmental impact assessment; and
- identify preferred directions, strategies and priorities for the future management and development of a region.

3.2 Guiding Principles

Principles for R-SEA can be separated into two components: core principles and methodological principles (after the IAIA 1999). Core principles apply to R-SEA in its entirety, regardless of the nature of R-SEA, focus of application, or stage of the process. Methodological principles are focused on the operational components of R-SEA, and characterize the underlying approach of R-SEA.

3.2.1 Core principles

Core principles apply to the R-SEAprocess in its entirety, regardless of the nature of R-SEA, focus of application, or stage of the process. Based on international SEA and CEA principles and guidelines, the core principles of R-SEA are as follows (Noble and Harriman 2008):

*Strategic:*identifies strategic initiatives, evaluates alternatives, and formulates a strategy for moving forward

*Futures-oriented:*focuses on identifying possible futures and the means to shape regional outcomes

*Early commencement:*is undertaken at the earliest possible stages of decision making, to inform the development of strategic initiatives, policies, plans, or programs

*Cumulative effects-focused:*identifies cumulative effects as the real effects of concern operating at the regional scale

*Multi-tiered:*assessment informs, and is informed by, broader regional and multi-regional environmental management and also downstream project assessment and decision-making

*Multi-scaled:*primary issues of cumulative effects can be revisited, where needed, not only at different tiers but also at different spatial scales

*Multi-sectoral:*encompasses the activities, policies and plans of multiple sectors that may exist in a region or that may influence regional-based processes and decision-making

*Participatory:*ensures early and ongoing involvement of relevant stakeholders and interested parties in assessment, monitoring and management

*Opportunistic:*provides an opportunity to examine regional development through broader stakeholder debate, and identifies the need to create or modify institutional arrangements for improved environmental management

*Adaptive:*treats strategies and PPPs as 'experiments,' expecting to modify and adapt them as new knowledge is gained through implementation, monitoring, and feedback

3.2.2 Methodological principles

R-SEA, being a strategic-based process, is largely informed by and based on SEA methodology. However, since its inception, understandings of SEAmethodology have been central to debate (Retief 2007). On the one hand, the Canadian Environmental Assessment and Research Council (CEARC 1990), for example, suggested that SEA methodology could be based in large part on methodologies and frameworks already applied at the project level. In the early years of SEA, this sentiment was echoed by The United Nations Economic Commission for Europe (UNECE 1992) who suggested that EA procedures at the strategic tier should reflect project-level EIA principles. This involves a basic shift of EIA methodologies upstream.

On the other hand, several authors and SEA practitioners (e.g. Noble 2008; Noble and Storey 2001; Bailey and Renton 1997; Boothroyd 1995) argue that an alternative approach to the extension of EIA upstream is required. Grafting SEA onto PPP formulation and assessment procedures will not be achieved by attempting to translate existing project-based EIA upstream (Brown and Therivel 2000). New methodologies appropriate for the types of questions asked at the strategic levels of assessment are required. As such, based on developments in SEA methodology, several methodological principles inform and guide R-SEA methodology (see Noble and Harriman 2009).

> *Integrated:*There are different interpretations of the nature and functions of a strategic approach, from that of validating PPP decisions to influencing decisional contexts and strategic initiatives (Vicente and Partidário 2006). The greatest potential for R-SEAlies in its ability to inform the development of strategies and PPPs early in the decision making process before irreversible decisions or actions are taken (Noble and Christmas 2007). Methodologically, R-SEA should be conceptualized as a framework with its core elements incrementally tailor-made through strategic and PPP development procedures and practices, regardless of the decision-making system in place.In this regard, R-SEA

becomes an integral part of, and provides overall guidance to, the development of regional strategies and initiatives rather than serving as a framework against which already developed PPPs are measured and assessed.

*Focused on alternatives:*Cumulative environmental effects are effects that speak about the future (Duinker and Greig 2006) and the sum of past actions. As such, and consistent with its strategic nature, R-SEA emphasizes the creation and evaluation of alternatives, often in the form of alternative development scenarios for the region. By comparing multiple, alternative development scenarios, decision-makers are able to obtain a vivid picture of the likely consequences of different initiatives, management plans, or courses of action. This allows decisions in R-SEA to be based not only on what has happened in the past, but on potential future trends, which may include also a number of surprises (see Theobald 2007).

*Regional VEC-based:*Cumulative effectsprocesses are often linked with highly complex global and regional environmental management issues such as climate change or biodiversity. The concept of aVECin R-SEA must be expanded beyond its general understanding in project-based EA. VECs must be relevant to the region and, as such, in addition to the consideration of traditional VECs R-SEA must focus also on such broad scale VECs as "ecosystem integrity," "biodiversity," or "fragmentation." Emphasis is placed on examining the full range of stresses on those VECs (Duinker and Greig 2006; Duinker 1994), or on some indicator of those VECs.

*Interdisciplinary:*Regional strategies and PPP initiatives almost always involve multiple levels of interest, ranging from political decision makers to disciplinary specialists, and demand the integration of both scientific and traditional knowledge forms in assessment and decision making. The Council of Science and Technology Advisors (CSTA 1999), an independent council established to provide the Cabinet Committee on Economic Union with advice on federal government science and technology issues, emphasizes a cross-disciplinary approach, one that enables decision makers and experts to identify and address horizontal issues and to appreciate where, and in what form, their information is useful to others and at different tiers of decision making.

*Structured and systematic:*A methodology provides general guidance and is applicable to a broad range of situations and contexts; methods and techniques, in contrast, are case and context specific.R-SEA should be flexible to the particular policy and planning context, but there is a continued appeal to ensure more systematic and structured methodological frameworks at the strategic level (e.g. Retief 2007; Noble 2005; Alton 2005; Fischer 2003, 2006; Noble and Storey 2001; Wiseman 2000). A structured and systematic methodology allows for:

- identification of PPP choices and communication of the decision structures underlying such choices;
- explicit analysis of tradeoffs between alternatives and across various interests;
- standardized, comparative evaluation of competing alternatives against specified thresholds, targets, or stated goals and objectives;
- opportunity for reassessment under variety of scenarios and at multiple spatial scales, without having to reconstruct the entire impact assessment process; and
- quality assurance in that the assessment output was derived based on an explicit set of decision rules thereby addressing the 'fuzziness' of PPP-level impacts (Noble and Christmas 2007)

3.3 Value-added of R-SEA

There are a number of opportunities and potential benefits associated with the implementation of R-SEA in Canada.R-SEA provides an opportunity to contribute to regional sustainability goals by:

- analyzing, identify and managing cumulative environmental effects at a more appropriate, regional scale;
- considering strategic alternatives early in decision making, ideally before irreversible development decisions are taken;
- supporting regional development and other regional or ecosystem based planning and management processes
- informing subsequent project environmental impact assessment providing opportunities to streamline the review process; and
- establishing the context and direction for preferred regional environmental management plans and frameworks.

R-SEA in Canada is still in its early stages of development and is largely untested. However, the anticipated benefits of an R-SEAapproach are a combination of the benefits already demonstrated in regional cumulative effects assessment and strategic environmental assessment practices.

3.3.1 Substantive benefits

The substantive benefits of R-SEA concern those underlying reasons for developing the process of R-SEA in the first place. There are four main substantive benefits to R-SEA:

Facilitates the development of improved PPPs and strategic initiatives:As an integrated process, R-SEA ensures that environmental and cumulative effects considerations are 'built-in' to resulting strategic initiatives and PPPs. The result is more environmentally sound PPPs, sensitive also to the social and economic context of the region and to other, existing PPPs. Major options are defined and discussed early in the decision making process, before irreversible actions are taken, so as to help ensure that formulated strategies and PPPs represent the 'best' course of action given stated goals and objectives, and in consideration of the constraints and conditions of the region.

Provides a broader, regional focus for development and decision-making:R-SEA provides allows the opportunities and risks associated with alternative development options or plans to be assessed while these options are still open for discussion (see Partidário 2007a). By adopting a long-term perspective, R-SEAallowsfor a better understanding of the relationships between environment and development, and provides an opportunity for a wider range of roles and stakes to be integrated in planning and assessment processes. Taking a long-term perspectiveis a critical means of ensuring that regional planning and development occurs within the context of desired rather than the most likely outcomes, and providing an appropriate context for evaluating subsequent project EAwith regard to how proposed actions fit with goals and objectives for the broader regional environment.

Ensures that cumulative effectsare captured at the appropriate tier and scale:EffectiveCEAis not an add-on component to project EA, appearing as a separate section at the end of an impact statement, or drawn from parallel regional

environmental studies. Rather, effectiveCEAoperates above the project tier, at the regional scale, and is implicit to the entire impact assessment and strategic decision-support process. R-SEAthus provides a context for lower tier assessments and project developments by identifying the cumulative VECs and VEC indicators of concern, which can inform project-based EA.R-SEA also captures the potential cumulative effects of developments that may not individually, or collectively, be subject to formal EA.

Contributes regional sustainability goals:R-SEA contributes to the discussion of alternative sustainable future scenarios and key environmental goals and objectives for a region.R-SEAfills a critical gap in the family of EA tools by providing a higher-tiered forum in which to identify key environmental issues and providing the opportunity to discuss and promote a sustainability agenda for a region.

3.3.2 Procedural benefits

In realizing these substantive benefits, R-SEA can further contribute to a number of procedural benefits that are indirectly related to the underlying purpose for implementing R-SEA, including:

Enables data sharing and transparency: For projects subject to EA under the *CEAA*, proponents are still required to consider the potential cumulative effects that are likely to result from their project in combination with other projects or activities in the region (s. 16.1(a)). For individual proponents, access to data beyond their own project, and at the broader regional scale, has been a major constrainttoeffectiveCEA (see Creasey and Ross 2005). In those regions where R-SEA is utilized, there is opportunity to facilitate data sharing on common VECs and VECindicators, and to maintain a 'living baseline' through combined regional and project-based environmental monitoring programs. Such data sharing and transparency increases the efficacy and regional relevance of project-based impact assessments.

Facilitates state-of-the-region environmental monitoring and reporting: Understanding the state of the regional environment requires on-going monitoring and reporting of stressors and effects. This cannot be achieved with development proponents operating independently in their monitoring and reporting efforts, or when higher-order strategic initiatives and PPPs are disconnected from project-based EA. Data sharing and monitoring based on common VECs or VEC indicators allows for an understanding of the overall state of the regional environment. This is something that is typically not achieved though individual project-based monitoring programs. Further, R-SEAitself does not end with strategy formulation or PPP implementation, but includes a feedback and learning process through regional environmental monitoring and follow-up activities. This monitoring and follow-up component can establish the common framework for data coordination and regional interpretation.

Potentially saves time and resources:Avoiding early on, rather than mitigating, cumulative environmental effects.

Allows project-based performance assessment:R-SEAideally includes establishing goals, objectives, targets and often thresholds for the region and for regional VECs of concern. Such goals, targets, objectives, and thresholds can provide a standard against which the significance of proposed projects with the region can be assessed, and a measure against which the environmental performance of on-going projects can be evaluated.

Provides an early indication of public interest:Project EIA processes often act as a "lightening rod" for regional development issues, becoming a forum to vet long-standing concerns. R-SEA is a natural forum to identify the primary issues and concerns in a region, providing an early opportunity for public debate of strategic initiatives and PPP opportunities. There is greater opportunity in R-SEA to debate policies, goals, objectives, and alternative development options because of its strategic and futures-oriented nature. This minimizes the potential for conflict in project EIA, and the resources and time that must be devoted to public consultation and involvement at lower tiers of assessment (von Seht 1999).

4.0 R-SEA FRAMEWORK AND GOOD-PRACTICE GUIDANCE

As an *impact assessment* process, R-SEA adopts such ex-ante tasks as scoping;identification and evaluation of alternatives;identification of a preferred option; mitigation; reporting; and monitoring, all in a consistent and systematic form, ensuring open and accountable decision making, and contributing to the improved quality of subsequent decisions (based on Partidário 2000). The output of R-SEAdoes not present 'the decision' but rather the results of a systematic evaluation of options such that a strategic direction can be identified for the region of concern and informed PPP decisions can be made (Noble 2002).In an operational sense, this demands a framework within which a liberal variety of methods and techniques can be used to address particular questions at the regional and strategic levels of decision-making.

The R-SEAmethodological framework is presented in Figure 1, and consists of three interrelated components:

i) a pre-assessment phase, focused on developing a reference framework for the assessment, scoping the environmental baseline, identifying cumulative baseline change, and delineating key trends and cumulative effects stressors of concern;

ii) an impact assessment phase,often technical in nature, that serves to identify and assess the cumulative environmental effects and associated impacts of alternative options and leads to identification and selection of a preferred option; and

iii) a post-assessment phase, focused on moving R-SEA output forward to PPP implementation and following-up on the results.

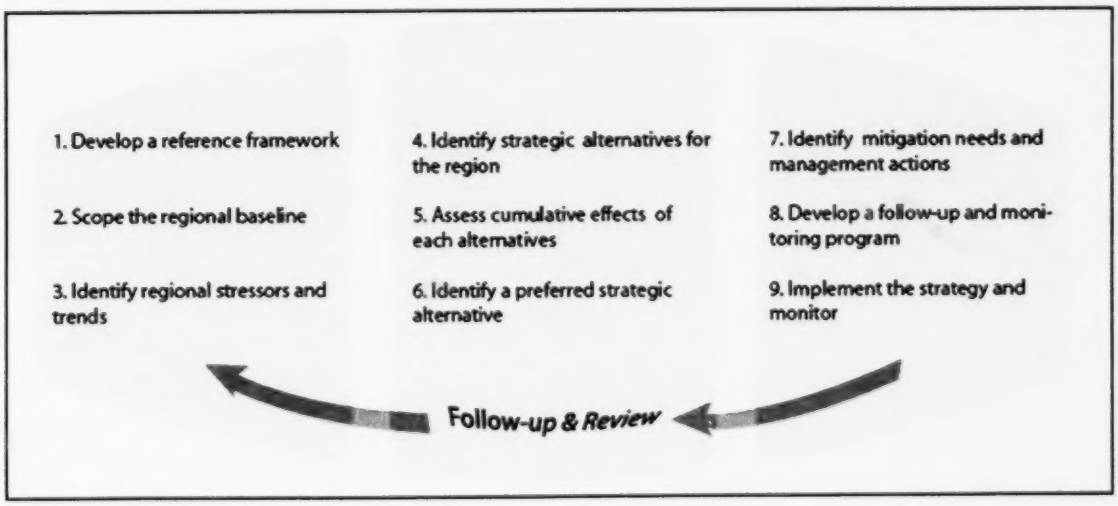

Figure 1. Methodological framework for R-SEA
Source: Based on Noble and Harriman 2009; Noble and Storey 2001

The core structure of the framework is based on Noble and Harriman (2009), and adapted from Noble and Storey's (2001) initial seven-phase framework for SEA application.The various components of the framework, including guidelines for good-practice, are informed by existing academic literature and the experiences of environmental decision makes in the field of EA. The components of the framework were developed by distilling and synthesizing knowledge from five domains of research and development:

- existing research and knowledge concerningSEA methodology in the Canadian context (e.g., Noble and Harriman 2009; Harriman and Noble 2008; Noble 2009a, 2008; Noble and Christmas 2007; Noble 2005; Noble 2002; Noble and Storey 2001);

- advances in structured SEA frameworks, guidelines and applications elsewhere (e.g., Partidário 2007a; Jackson and Dickson 2006; Therivel and Partidário1996; Therivel 1993, 2004;Marshall and Fischer 2006; Fischer 2003, 2006; Sheate et al. 2003; European Commission 2001);

- conceptual frameworks and concepts about regional CEA (e.g. Dubé et al. 2007; Harriman and Noble 2008; Duinker and Greig 2006; Greig et al. 2004; Dubé 2003; Kennedy 2002; Beanlands and Duinker 1983); and

- current thinking and discussions with international CEA and SEA experts based on the Ph.D. dissertation work of Harriman, University of Saskatchewan, Department of Geography and Planning.

The following R-SEA framework is largely untested in Canada, but the utility of a similar strategic framework has been demonstrated in the Great Sand Hills, Saskatchewan, and is reported in *Impact Assessment and Project Appraisal* by Noble (2008). In presenting this framework, there is an underlying assumption that cumulative environmental effects can be identified and assessed, and that the necessary science and institutional arrangements are available to support the framework.

4.1 Phase 1: Develop a Reference Framework

The first step in the application of R-SEAis to develop a reference framework and establish the context within which the R-SEAwill take place. There is a relation between the awareness of context, context sensitivity, and the success of R-SEA implementation (see Hildén et al. 2004). Context refers to the facts or circumstances that have an impact on R-SEA, and also the conditions that have an impact on the outcomes of R-SEAimplementation. This includes the chosen aims or goals of R-SEA, institutional or regulatory environment, expectations about implementation, participants in the assessment process, and the organizations involved (Hilding-Rydevik and Bjarnadóttir 2007; Hedo and Bina 1999.

The purpose of developing a reference framework is to delineate the overall nature and scope of the R-SEA, including:

- scoping the specific question(s), issue(s) or initiative(s)to be addressed;
- identifying opportunities for tiering to project impact assessment and to other types of planning and decision-making, including higher-tiered policies;
- determining the various parties and partnerships to be involved in the R-SEA process, their relationships, relationships, and available resources and, at least initially, roles in monitoring and following-up upon implementation of R-SEAresults and recommendations;
- identifying the relevant publics and necessary extent of involvement and consultation; and
- developing a terms of reference for the R-SEA.

Early consideration should also be given at this stage to the availability of existing science outside the R-SEA process, how that science is to be organized and used inside the R-SEA process, and to how much new sciencemust be carried out in order to successfully implement the R-SEA. Such considerations are important in framing the overall R-SEA process, and in determining the overall scope and level of commitment required to carry out the R-SEA.

Good-practice Guidance

Scoping the specific question(s), issue(s) or initiative(s) to be addressed:R-SEA may be commissioned for a variety of reasons. Important at the outset of the R-SEA is to clarify the nature and scope of the particular strategic initiative orPPP issue that is to be addressed. Similar to the 'project description' phase of traditional EIA, the particular problem or initiative must be sufficiently described and a rationale presented as to why an R-SEA is being applied.The description shouldbe accompanied by the specific strategic questions that are being pursued. It may be the case, for example, that the initiative or issue at hand is one of land use planning, concern over the potential cumulative effects of human activities in the region, the need for a management plan to control or direct development, or the need for proactive planning for the conservation and protection of natural resources. In this regard, attention should be given to determining what it is that the R-SEAis expected to deliver, and what are the core principles guiding the process. For example, the overall deliverable may be

to generate a particular strategy for regional development while the guiding principle may be one of sustainability.

Identifyingopportunities for tiering to project impact assessment and to other types of planning and decision making, including higher-tiered policies:R-SEApresents the opportunity to influence decision inputs at lower tiers of decision-making, including project-based EIA – helping make EIA more efficient and more informed of broader regional issues, trends, and cumulative effects.As such, consideration should be given to the 'types' of information that are required of the R-SEA in order to facilitate tiering to downstream impact assessment. This may involve, for example, the inclusion of particular VECs or the need to establish particular VECorregional targets and thresholds. A two-way conversation should take place that also highlights what project-EIA may contribute to the R-SEA process. In addition, consideration should be given to higher-tiered and horizontalPPPs and initiatives so as to:

i) identify priorities or higher-order policy objectives that may influence the R-SEA or the implementation of results, and therefore should be taken into consideration; and

ii) identify opportunities to link with horizontal PPPs and other regional initiatives to improve overall strategy performance or regional environmental management.

Determining the various parties and partnerships to be involved in the R-SEA process: Not only is it important to designate a responsible/ implementing party(ies) for R-SEA, it is also important to give preliminary consideration to the necessary partnerships and authorities for implementation of the R-SEA outcomes, including monitoring and follow-up (see *Phases8 &9*). As the R-SEAprocess unfolds, the need for further involvement of additional government bodies, planning agencies, industries, or for the formation of various public and private partnerships may become apparent and new roles and responsibilities may be defined. R-SEA, from context setting to PPP implementation and follow-up, will rarely occur within the scope of a single agency or authority. R-SEA demands a level of administrative, political, and scientific coordination that is not common practice in project-based EA. It may be the case that an independent body is commissioned to carry out the R-SEA. In such cases there is a need to ensure a certain degree of autonomy, but at the same time ensure that the independent body has the necessary administrative and technical support from the responsible government agency or authority.

Identifying the relevant publics and necessary extent of involvement and consultation: This guidebook does not prescribe a 'how to' framework for public involvement programs, but successful and meaningful public participation is important to the success of R-SEA (see Table 2). The relevant publics and other organizations and institutions should be consulted as early as possible in the R-SEA process, and ideally at the time of or prior to the development of a 'terms of reference' for the R-SEA. Participation at this early stage will serve as a 'litmus test' for public interest; increase the transparency of the R-SEA process; provide an opportunity to identify potentially conflicting values and public perspectives; and ensure that those issues that the public deem as important or relevant are addressed in the scoping of the R-SEA process.

Continued public involvement throughout the R-SEA processes will further result in innovative solutions and creative regional initiatives; educate and increase public awareness and the

public's sense of responsibility; and reduce time and resources needed for public involvement at the project-level (Noble 2004; von Seht 1999; Glasson et al. 1994). In is important that the public be involved at strategic decision points in the R-SEA process such as baseline scoping, the development and assessment of alternatives, and prior to a decision being taken on the preferred strategic initiative, policy, plan, or program. The nature and extent of public involvement should be commensurate with the level of public interest, also taking into consideration the potential for land use or resource conflict, known Aboriginal land interests, and the potential distribution of social costs and benefits associated with the future development of the region.

In determining who may be involved in the R-SEA, consideration should be given first to those who live in the region where the strategic initiative or PPP will be implemented and are thus directly affected, and also to those who represent various interest groups, quasi-statutory bodies, and to those who are concerned with a specific aspect of the environment or region, including also the proponents of existing and proposed development projects.

There is a variety of supporting public involvement techniques that can be used throughout the R-SEA process and for various purposes (Table 3). It is not our intent to review each technique in this guide, but a comprehensive discussion of more than 30 techniques for public involvement in decision making, including consideration of logistics and associated costs, is outlined by Health Canada (2000) in the 'Health Canada Policy Toolkit for Public Involvement in Decision Making.'

Table 2. Elements of successful and meaningful public participation programs

Integrity and accountability: transparency, sincerity of the lead organization, clear process intention, and feedback to participants

Influence: participants have a genuine opportunity to be heard and to influence decisions

Fair notice and time: genuine effort to engage the public and to encourage participation

Inclusiveness and adequate representation: identifying and engaging all of the potentially impacted and interested publics

Fair and open dialogue: a two-way flow of information and open discussion and debate

Multiple and appropriate methods: a staged process that uses multiple tools and techniques to engage the public

Adequate and accessible information: an opportunity to build a high level of understanding of the issues and of the various perspectives and views of participants in order to effectively debate the issues and reach an informed position

Informed participation: participants may need help understanding and interpreting information put before them - access to information, quality of information, and how information is presented affects the quality of a participation process

Source: Stewart, J. and J. Sinclair 2007. Meaningful public participation in environmental assessment: perspectives from Canadian participants, proponents and government. *Journal of Environmental Assessment Policy and Management* 9(2): 1-23.

Table 3. Techniques that support public involvement in higher-order planning and assessment

Public hearings	Workshops	Consensus conferences
Deliberative polling	Delphi process	Panels
Consultation groups	Round tables	Community monitoring
Advisory committees	Scenario workshops	Participatory mapping

Focus groups	Citizen tasks forces	Public dialogues Interviews

Developing a 'terms of reference' for the R-SEA: The 'terms of reference' is the first official, public notice of the intent to carry out an R-SEA. Its purpose is to briefly describe the R-SEA context, the need for and overall goals and objectives of the R-SEA, identify the responsible parties, the timeline for implementation, and report on the overall methodology that will guide R-SEA application. These terms of reference should be published and made publically available for public and expert comment in order to allow for input from outside interests (see von Seht 1999), and also to gauge the nature and extent of interest in the region and in the R-SEA process. Following receipt and review of comments, the final terms of reference should again be made publically available so as to ensure a degree of transparency from the outset of the R-SEA process.

4.2 Phase 2: Scope the Regional Baseline

Scoping is arguably the most important step in any strategic assessment process (Noble 2006, Hedo and Bina 1999). At the strategic level, scoping entails several stages that together define the current profile or "baseline environment" for the region. These include:

- Identifying key regional issues and concerns.
- Establishing valued ecosystem components (VECs)and their key indicators.
- Determining the spatial and temporal boundaries of assessment.
- Evaluating the current state of valued ecosystem components.
- Identifying, where appropriate, ecological thresholds, management targets, and maximum limits of change for valued ecosystem components.

The scoping phase of R-SEA follows the same basic principles and procedures as for any SEA, with the additional principle that VECs, indicators, and issues are interpreted in a regional context and include greater attention to cumulative environmental effects.

At the heart of scoping is a series of decisions to either "scope in" or "scope out" various issues and environmental components. This is necessary to bound the assessment, making it possible to carry outR-SEA within the constraints of time and resources, and also to ensure that the process itself is manageable and able to deliver results in a timely fashion in support of environmental decision-making (DEAT 2004). However, because decisions about what is included or excluded from assessment are largely subjective in nature (Karstens et al. 2007), such decisions must be justified and made explicit. An R-SEA cannot include consideration for every element and issue in a region. The purpose is to establish baseline knowledge of the key assessment components and characteristics of the region that can be:

i) monitored over space and time for the purposes of change assessment; and

ii) projected forward, either quantitatively or qualitatively, as part of a trends analysis (*see Phase 3*) and used as the future conditions against which alternative options and future scenarios can be assessed for the region.

R-SEA operates at a broad conceptual scale and accepts a high degree of uncertainty about future conditions. Depending on the nature of the assessment and available time and resources for baseline assessment, characterization of the baseline maybe more problem-oriented than data-oriented, and more contextual than analytical.

Identifying key regional issues and concerns: The first part of any scoping process is to identify the primary issues of concern in the region. An 'open' scoping process is preferred, where issues and concerns in the region are identified based on consultation with local communities, interests, and stakeholders. This provides an opportunity to engage the public and various stakeholders in the scoping process, and also to gain an understanding of public values and priorities.Of course, not all issues identified during the scoping phase need be of concern to the public – many issues may be of ecological concern, such as the health of particular species, or the biodiversity of the region.

Further, not all issues and concerns identified will form part of the R-SEA process, as this is neither feasible nor desirable. As such, scoping should be specifically designed to help *focus* the R-SEA on regionally relevant components, aid in the narrowing and selection of VECs, identify potentially relevant direct and indirect impact issues and concerns that may be addressed during PPPdevelopment and implementation, and help identify strategic alternatives (*see Phase 4*) that are meaningful to the region.

An important part of issues scoping is to describe known cumulative effects issues and develop an account of strategies already in place to address them. Cumulative effects issues may be identified through consultation, document review, or new data collection. Some questions to start the issues identification process include:

- What are the long-standing or contentious issues in the region?
- What broad processes of change are unfolding or are anticipated and how are these viewed by the regional community?
- What are the origins and developmental history of these processes or issues?

Therivel and Ross (2007) emphasize that the description of the historical build-up of effects is particularly useful, as it gives an indication of why cumulative effects have arisen and how they might be managed in the future.

Establishing valued ecosystem components and their key indicators:VECs should take'centre stage' in EA (Duinker 1994), and identifying the VECs on which the R-SEA will focus is central to scoping the assessment. VECs of both scientific (ecological) and public (social, cultural) value should be included in the R-SEAVECidentification and selection process.

The identification of VECs, as typically defined in the context of project EA, has suffered from what is known as the 'problem isolation paradigm' (Charland 1996). In this approach, an environmental problem is addressed by breaking it down into its supposed component parts, focusing on individual stressor-VEC relationships, solving for each part individually, and later summing up to find a 'solution'. This is particularly problematic in EA, and particularly so when regional and cumulative effects are the focus of attention. In other words, the sum of stressor-VEC relationships is not equal to the cumulative state of a VEC, although cumulative effects assessment has been approached in this manner.

Ross (1998, cautions that the larger the area under consideration, the less likely it is that a particular effect will be identified as significant. This is because more sources of effects tend to get captured in a large-scale analysis. This may be true when considering the contribution of individual project stressors to cumulative change; however, R-SEAis not focused on individual actions per se but rather on cumulative stressors and cumulative VEC responses. In other words, the issues of concern in R-SEAare first the regional VECs or total effects, regardless of the individual point source stressors, and only then are the cumulative contributions of the individual stressors themselves of concern.

This is not to say that VECs that would normally be used in a project assessment will not be selected for R-SEA, rather that the suite of VECs selected for R-SEA will be a 'mixed bag' of traditional VECs and regional VECs as defined through the process of issues scoping (Table 4).The point is to develop awareness of VECs that represent the regional scope of the assessment. Focusing on 'regional'VECs, such as biodiversity, sets a context for subsequent project-specific evaluation.These types of broader, regionalVECs must be selected carefully; they also need to be 'unrolled' for the purpose of assessment and monitoring. That is to say, VECs such as biodiversity must also be defined in terms of their constituent parts, such as fragmentation, or species-specific composition.

Table 4. Examples of VECs in project-EA vs. R-SEA

Project EA	R-SEA
individual organisms; populations; localized communities	species guilds; biodiversity; ecosystem services
rare, endangered, or threatened species; culturally-significant species	rare, endangered, or threatened species; culturally-significant species
protected sites; heritage sites	environmentally sensitive areas or bio-geo-climatic zones; culturally sensitive areas; biodiversity 'hot spots'
riparian zone; water contaminants	watershed; water quality and quantity
forest stand	habitat connectedness; movement corridors
employment; personal health	total economic productivity; community health and well-being

VECs at the regional scale are not necessarily congruent with those at the project scale; however, they may share common indicators.Once a VEC is identified, it is important to identify the indicator by which the condition or state of the VEC will be expressed (e.g. indicators of water quality; indicators of community health). VEC indicators are measurable parameters of the VEC of concern, and in some cases may be VECs themselves. VEC indicators essentially allow decision-makers to gauge environmental change efficiently by focusing on those parameters that are responsive to change, generate timely feedback, and can be traced effectively over space and time. VEC indicators then are the most basic tools for analyzing regional, cumulative environmental

change and many examples of ecological indicator programs are now available to follow (see examples in Smyth et al. 2006). At a minimum, VEC indicators should be:

- measurable, either in a qualitative or quantitative fashion;
- indicative of the VEC of concern;
- sensitive and detectable in terms of stress;
- appropriate to the spatial scale of the VEC of concern;
- temporally reliable;
- diagnostic to the cause of change; and
- meaningful to decision makers(Noble 2009b).

Determining the spatial and temporal boundaries of assessment: The spatial scale of assessment should consider biophysical, socioeconomic and cultural resources and their regional relationships as well as land uses, policies, and interests that may potentially affect any of the alternative scenarios developed for the region (Noble 2008). Spatial boundaries for a regional assessment will ideally correspond to some type of natural boundary such as a watershed, geological region or ecosystem, but it must also be sufficientlyflexible to reflect the spatial extent or distribution of theVECs (Spaling and Smit 1993). Some VEC boundaries may be very large and others relatively small, with some or no overlap.This process of "scaling-down" and "scaling-up" is fairly common in EA, but the notion of "scaling-out" or the process of "spatial extrapolation of successful approaches to other sites with similar circumstances" (Lovell et al. 2002:33) may be particularly useful in R-SEA to define appropriate assessment boundaries.

The temporal boundaries for a regional, strategic assessment should be long-term – looking to the distant future, and where possible looking to the distant past in order to understand regional change and the drivers of such change over time. There is no specific temporal boundary that will work best for all R-SEA applications. Berube (2007: 101), based on astudy of 12 CEAs in Quebec,concluded that "future effects can rarely be predicted over a ten-year period when combined with other impact sources". However, R-SEA is not about 'predicting' the future but rather about pursuing or creating desirable futures. As such, R-SEA provides the opportunity to adopt much longer-term perspectives including 25, 50 and even 100-year time horizons.

In casting broad spatial and temporal boundaries for R-SEA, however, it is important to maintain a focus on the necessary inner bounds or resolution requiredto also capture and account for both spatial and temporal variations in stressors and VEC patterns, conditions, and responses.

Evaluating the current state of valued ecosystem components: The purpose is to establish and report on the current conditions of VECs in the region (e.g. quality, quantity, distribution, functioning, health, productivity); and to identify any "hotspots" within the region (e.g., areas of high VECconcentration, biodiversity, importance, or sensitivity) that may warrant protection or more detailed analysis in the R-SEA or in subsequent project-based impact assessments. The methods and techniques used for this part of the R-SEA baseline should be similar to those used in any baseline assessment, and will likely include such methods and techniques as GIS, participatory mapping, various field studies, reviews of previous research conducted in the region, and local knowledge. The current state of VECs will be used for change assessment and monitoring over time.

Identifying ecological thresholds, management targets, and maximum limits of change for valued ecosystem components: For each VEC, or VEC indicator, it is desirable to establish, where appropriate, a threshold, target, or maximum allowable effects level (MAEL). Thresholds, targets, and MAELS serve as benchmarks against which environmental effects, compliance, performance, and baseline change can be evaluated. For most VECs or VEC indicators, such thresholds, targets or MAELS are not likely to pre-exist and will need to be determined as part of the scoping process. Based on guidance for 'best-practices' in project-based EA (Noble 2006), thresholds, targets, or MAELS can be determined based on:

- consultation with regulatory agencies;
- levels of "acceptable" or "tolerable" change as identified by the public or stakeholders;
- scientific research, recommendations, or ecological thresholds;
- strategy or PPP specific goals, objectives, and targets; and
- goals, objectives and targets of other horizontal or higher tiered PPPs.

4.3 Phase 3: Identify Regional Stressors and Trends

Identifying the regional stressors and trends in a region is important to informing the development of future scenarios and in understanding possible VEC responses or conditions under those scenarios. This is the retrospective phase of R-SEA, and is focused on:

- Identifying the primary human drivers of change or disturbance in the region, including changes in policy directions and management approaches.
- Identifying possible external or natural drivers of change.
- Characterizing valued ecosystem component or indicator responses over space and time.

In many cases, up to 50% or more of the total time committed to R-SEA may be consumed in the baseline phase; however, to stop at the pre-assessment phase is to stop short on delivering the intended purpose of R-SEA and in meeting its objectives. Regional baseline studies alone are incongruent with the objectives of R-SEA because they fail to progress beyond the data collection phase. It is assumed that the purpose of R-SEA is to perform an assessment of strategic alternatives. Thus, while the pre-assessment phase for any R-SEA is vitally important and can be time and resource intensive, the decision making stage is yet to come.

Good-practice Guidance

Identifying the primary human drivers of change or disturbance in the region, including changes in policy directions and management approaches: At the core of understanding regional cumulative environmental effects is the identification of existing stressors on the regional environment. In project-based EIA, stressors are typically understood as a particular action or activity in relation to the projectthat cause some effect upon the receiving environment. At the regional scale, however, the nature of stressors is 'scaled up' to capture total, or cumulative environmental effects on regional VECs. It is useful to conceptualize these stressors as 'drivers' of regional change. This brings into focus the collective influence of development and disturbance, which, despite modality, may have similar resulting influences or effects on the environment (e.g. Nitschke 2008; Culp et al. 2000). For example, while forestry, agriculture, and urban development each have distinct patterns, they may each contribute incrementally to habitat fragmentation, which is a key driver of regional change.

Drivers of change in a region may be natural or man-made (Pirrone et al. 2005), and include policy and management actions. Regional landscape change is often a result of synergy between factors such as: population; economics (industry); cultural values; policy; and developments in science/technology. Some specific drivers of regional change may include the expansion or contraction of industrial sectors (energy, forestry, mining, agriculture, etc.); shifting policy regimes and the interplay between institutions at multiple levels and scales (Cash et al. 2006); in- or out-migration of population and other regional population shifts; and land change processes such as habitat fragmentation, surface disturbance, and increase in impervious surfaces—the cumulative product of a variety of individual and activity-specific stressors.

Identifying possible external or natural drivers of change: Part of understanding how regional drivers of change influence the condition of VECs is to develop awareness of the broader dynamics of change that may affect regional conditions (Table 5). The drivers of change in a region are the product of one of two types of relationships among stressors: (i) the dynamics among localized processes of change within a region, and (ii) broader currents of change that may be national, international, or global in scope. These intra-regional and inter-regional dynamics act together to influencethe condition of regional VECs. Thus, an R-SEA process must not only be sensitive to collective currents of local change but also demonstrate awareness of inter-regional, national, and global currents of change (Rees 1995). These higher-order influences are often expressed through policies and agreements put in place to deal with highly complex issues such as sustainability, biodiversity, and climate change. Extra-regional influences demand that the approach toR-SEA must be extended, at least conceptually, to connect with other tiers of assessment and management. This point was underscored by Bedford and Preston (1988) who, two decades ago, in a study of wetland habitat loss, pointed out the incongruity between regional and national scales at which wetland losses were occurring and the project-specific scale at which wetlands are regulated and studied.

Table 5. Influences on regional change dynamics

Influence	Dynamic	Example
Intra-regional (within the region)	Synergistic, compounding or surprise effects as a result of combined local activity	Impervious surfaces or combined surface disturbances fromroad development
Inter-regional (among regions)	Cross border interactions	Acid rain deposition as a result of extra-regional industrial activity
National	Multi-region trends	Land, air or species decline
International	Climate change	Regional warming or cooling trends due to global climate change

Characterizing valued ecosystem component or indicator responses over space and time: The final step is to characterize VECresponses to the main drivers of change, based on relationships between stressors and how VEC indicators respond. It is here where analytical models are often developed to link stressors and VEC-related indicators. The objective, where possible, is to identify cause-effect relationships between regional drivers and regional environmental responses such that baselines can be projected and the effects and impacts of alternative futures discerned. That said,cause-effect relationships are difficult, and often impossible, to establish in complex regional systems characterized my multiple stressors. It is more often the case that such relationships will be based on statistical associations or correlations (e.g. road density to species occurrence; total expenditures on nitrogen fertilizers to water quality), or hypothesized based on previous experiences or assumptions about VECS or system behaviour. A

variety of methods are available to support this objective, borrowed from both the physical science and social science tool-kit (Table 6).

Table 6. Sample methods that support identifying driver-response relationships and trends

Retrospective modeling	Delphi
DPSIR frameworks	Social surveys
Network analysis	Participatory GIS
Photographic progressions	Ad hoc approaches
Analysis of project monitoring data	Traditional knowledge
Statistical correlations	Systems modeling

4.4 Phase 4: Identify Strategic Alternatives for the Region

Alternatives and alternatives assessment lay at the heart of R-SEA, and any R-SEA application must identify and systematically assess a range of alternative options for the regional strategy or PPP being developed. The alternatives represent the decision options or different future scenarios amongst which the decision maker(s) must choose. Unless there is more than one potential and feasible way to proceed, there is no choice to be made and therefore no assessment is needed (Noble 2006). By comparing multiple, alternative scenarios, decision-makers, are able to obtain a vivid picture of the likely consequences of different policies, management plans, or courses of action (GSH SAC 2007). In doing so, the focus is shifted away from trying to predict what is most likely toward questions of what are the potential consequences and mostappropriate responses under different circumstances.

Included amongst the alternatives is the future baseline scenario against which other alternatives and scenarios can be compared. Procedurally, identifying strategic alternatives for the regions is focused on:

- Identifying strategic alternatives or ways to proceed in the region, including the baseline alternative.
- Constructing descriptive scenarios of what each alternative will consist of in the regional environment.
- Accounting for the influence of external policies, actions, or natural change.

Formulating strategic alternatives and scenarios is not about predicting the future; rather, it is about creating a choice of futures by determining alternative possibilities and thereby creating a foundation for strategic planning and shaping present actions (Duinker and Greig 2007).Scenario analysis is thought to be particularly useful in defining future developments for cumulative effects assessment (see Duinker and Greig 2007).

Good-practice Guidance

Identifying strategic alternatives or ways to proceed in the region, including the baseline alternative: Strategic alternatives represent the range of options to be considered for the region, courses of action, or ways of moving forward. Alternatives can be identified in several ways, including public and expert consultation, the use of computer models, or borrowed from other comparable situations. The objective is not to identify or predict precise outcomes or futures, but to delineate, in the broadest sense, what options are available for the region. The range of alternatives to be considered should capture the 'bookends' for a region, in other words, what is 'possible' and what is 'preferable', including the alternative of the future baseline scenario.

There is no real consensus as to whether alternatives should be limited to those that are feasible based on current technologies and financial resources or whether more futuristic and hypothetical alternatives should be included. However, if the intent is to follow through with implementation of the strategy or PPP once the R-SEA is complete, then consideration must be given to technological and financial constraints, and how much innovation and flexibility are required to realize any given alternative. In this regard,

alternatives should be screened to factor out those alternatives that are simply not attainable,conflicting with cultural land uses (e.g. Aboriginal lands), or simply incompatible with broader policy objectives such as sustainability or protection of biodiversity (Figure 2).

From a practical perspective, the types and range of alternatives considered should:

- be consistent with higher-tiered sustainability policy goals;
- not contribute to irresolvable conflicts within the region; and
- be culturally compatible
- be economically and technologically feasible.

In an operational sense, alternatives may consider different spatial and temporal attributes of strategic options, and/or alternatives modes, processes, methods, and technologies.

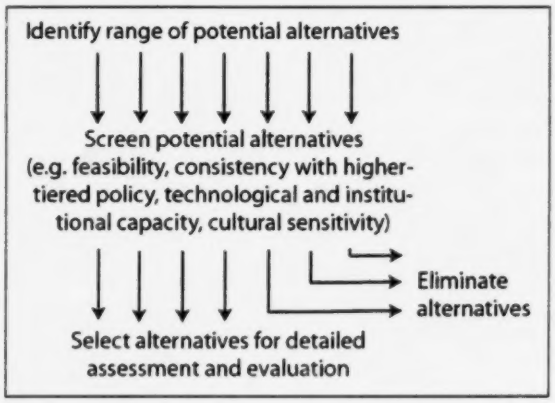

Figure 2. Selecting strategic alternatives for assessment
Source: Adapted from Steinemann (2001)

Constructing scenarios of what each alternative will consist of in the regional environment: Alternatives represent different ways to proceed in the most general sense. Thus, some consideration must be given as to what each alternative will look like. In other words, associated with each alternative will be a different set of patterns, events, and human stressors. In order to identify and delineate a preferred alternative, consideration must be given to the set of conditions and circumstances of each alternative. Different alternative scenarios are likely to involve different sets of stressors, or configurations of stressors, and for any given alternative there is a range of spatial and temporal possibilities as to how these stressors may unfold across the landscape. Scenario planning is not predictive (Ogilvy 2005).From the perspective of CEAit requiresdefining the activities and events that could occur in the region under each alternative. From a strategic perspective, this also requires some consideration of those activities and events that are "desirable" to occur.

Scenario development is not about making predictions or forecasts, but rather about describing the alternatives and their associated assumptions and conditions. A scenario is broadly defined as "a hypothetical sequence of events constructed for the purpose of focusing attention on causal processes and decision points" (Kahn and Wiener 1967:6). Scenarios describe plausible but unverifiable accounts of change in a set of conditions or events over a defined space and period of time, based on different assumptions about primary drivers and stressors in the region (Figure 3).Rather than showing what 'will be', scenarios focus on alternative futures or what 'could be' under each alternative (Noble 2008).

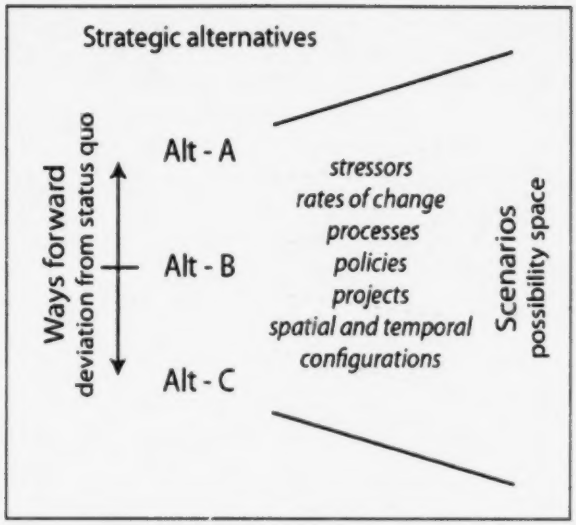

Figure 3. Alternatives and scenarios in R-SEA

There is no magic number of scenarios that is best, but each scenario should provide significant contrast from the others – even when multiple scenarios are created for a given alternative. Based on a review of scenarios and futures methods, Greig et al. (2004) suggest that two to five scenarios is usually considered optimal; however, they point out that three scenarios usually leads to an inevitable focus on the "middle" scenario as the most likely decision (see also, Schwartz 1996).How far into the future each scenario looks will depend in large part of the specific context of the R-SEA application; however, the benefit of using a scenario-based approach is to look well into the distant future, and beyond the scope of a traditional project-based impact assessment.

There are several methods available for developing scenarios. Greig et al. (2004) provide a comprehensive list of commonly used futures methods in a research and development report prepared for the Canadian Environmental Assessment Agency. While trends analysis is typically the most common approach for developing scenarios based on the status quo or baseline projection, alternative methods for scenario development include: environmental scanning; futuresworkshops; simulation modeling; cross-impact matrices; and expert opinion and Delphi surveys (Greig et al. 2004).

Accounting for the influence of external policies, actions, or natural change:A final component of scenario development is the consideration of what Duinker and Greig (2007) refer to as 'external wildcards', or what Cherp et al. (2007) term 'emergent and external' events. These are the external drivers identified during the baseline (see*Phase 3*). Futures are highly uncertain when dealing with broad regional scale and strategic-tiered initiatives and PPPs, and the success and failure of those strategies and PPPs is very much dependent on those wildcard or external forces. Perhaps the most common of these, when dealing R-SEA for regional land use planning, is the role of climate change and how climate change considerations are factored into regional stressors as well as assumptions about rates of change in regional environmental components. However,

other external and emergent concerns such as economic or policy change, including changes in global markets and conditions, may be of particular concern when the emphasis of R-SEA is on planning for future industrial development. While these factors cannot be predicted, they should be considered amongst the scenario assumptions so as to understand better the resilience of the alternatives under consideration, and to ensure that such factors are recognized in the development of post-implementation monitoring and follow-up programs (see *Phase 8*).

4.5 Phase 5: Assess the Cumulative Effects of Alternatives

Assessment is carried out in order to estimate the nature or quality of the potential effects of future scenarios, as constructed under each of the alternatives, and assumptions about changes in stressors and future conditions. At this stage the purpose is to identify effects or changes in VEC conditions under each scenario. Once an effects profile for each scenario has been articulated, a debate on the implications of those effects and the relative desirability of each scenario (*Phase 6*) can more easily take place.

While theultimate goal of assessment is to ascertain the desirability of each alternative future scenario, the focus at this stageis on characterizing the effects that could result under each scenario of change—relative, cumulative changes and their relationships to VECs. In assessing the potential environmental effects of each alternative scenario, including cumulative environmental effects, the objective is to:

- Identify potential effects on, threats to, or changes in the state of valued ecosystem components under each alternative scenario.

There are different ways to approach the assessment of alternative future scenarios. The assessment process can be structured primarily as one or a series of technical exercises supported by computer modeling and analysis; primarily as a communications exercise in which interests and positions are mapped and there is in-depth discussion and debate to suggest potential effects; or as a combination of the two. The approach that is developed will depend upon the overall goals and objectives of the R-SEA; the type and quality of data available for the region; the complexity of the cumulative effects issues under consideration; and available time and resources. In most circumstances, the assessment will include both technical and communications components. In some cases, communications exercises are used not only for effects assessment but also to identify particular effects issues that require in-depth, technical analysis.

Good-practice Guidance

Identify potential effects on, threats to, or changes in the state of valued ecosystem components under each alternative scenario: The process of identifying VECconditions or responses under each alternative scenario requires consideration of how each scenario may alter or influence the main drivers of regional change, andVEC responses, or effects, based on consideration of VEC-indicator relationships established under Phase 3 of the framework.

Long-term assessment horizonsare characterized by vast uncertainties about change, including external drivers, and thus lead to corresponding uncertainty about what effects are most likely to occur as the future unfolds. Thus, statements about VEC responses or future conditions are not predictions of what *will* happen under each alternative and constructed scenario, rather they are *contingency statements* of what could reasonably unfold if the trends identified and relationships established hold true (Duinker and 2007). The goal is to try to determine the host of effects each scenario will have upon regional VECs over space and time. Therivel and Ross (2007) suggest concentrating on the total effects on a resource arising from different components of the plan; and the total effects of the scenarioin combination with other regional plans.

The objective is not to develop a comprehensive listing of effects and effect interactions. This kind of exhaustive approach has often stymied practitioners of CEA in the past because there are simply too many interconnections, effects, and relationships to describe. While this type of approach does have its place, it presents severe time and resource constraints that would render it impractical within many R-SEA settings(MacDonald 2000). There must be a balance between the amount of effort put into effects assessment, the resources available, and the importance of the VECs for which interactions are being identified and analysis being performed. The focus should be on effects and interactions that have the potential to cause significant changes to regional VECs (or indicators) relative to the baseline, and on those VECs that were characterized during the baseline assessment as vulnerable, irreplaceable, or otherwise more sensitive to adverse change. For other VECs and interactions, replacement of a more detailed quantitative analysis for a qualitative-focused one, even though it may have less accuracy, may be optimal provided the information still meets management objectives.

Create a summary or profile of effects for each scenario: Once the future environmental conditions under each scenario have been identified, it is important to summarize the effects identified under each scenario for the purposes of facilitating a discussion about the implications of those effects and to identify a preferred alternative (see *Phase 7*). In other words, there must be a way to summarize for decision makers the overall change that each scenario potentially represents to the regional environment. This step is really one of communicating about the regional environmental effects under each alternative scenario. There are a variety of methods readily available to communicate complex environmental interactions and effects. Their primary function is to provide a synthesis of information and to facilitate a visual comparison of alternatives and conditions under each scenario. Methods for communicating aggregate effects profiles are not unique to R-SEA and are accessible from a variety of EIA guidance materials (see Noble 2006, Canter 1996, Wood 1995).

*Supporting methods and techniques:*The particular methods and techniques used to support the assessment of cumulative effects depend, in large part, on the nature of the relationships established under Phase 3 of the assessment. Generally speaking, however, in any R-SEA there is an opportunity to employ a range of methods and techniques (Figure 4). This includes those that are qualitative or broad-brush in nature and that may only indicate simple rates, directions, or patterns of change (e.g. expert-based Delphi approaches; participatory mapping, and focus groups). Directional impact statements (improving worsening, etc.) and ordinal scales of impact assessment (large, medium, small, unknown impact; or negative, positive, neutral, unknown impact) are commonly used when levels of uncertainty are high and the potential for quantification of data is low (Therivel 2001). Often, simple +/− projections are all that is possible and therefore the most useful outcome of a CEA (Therivel and Ross 2007). In other cases, where sufficient baseline data are available, methods that are highly quantitative and capable of processing vast spatial data sets and running multiple scenario iterations while simultaneously considering complex pathways and VEC interactions (e.g. simulation modeling, Marxan analysis) may provide the most utility.

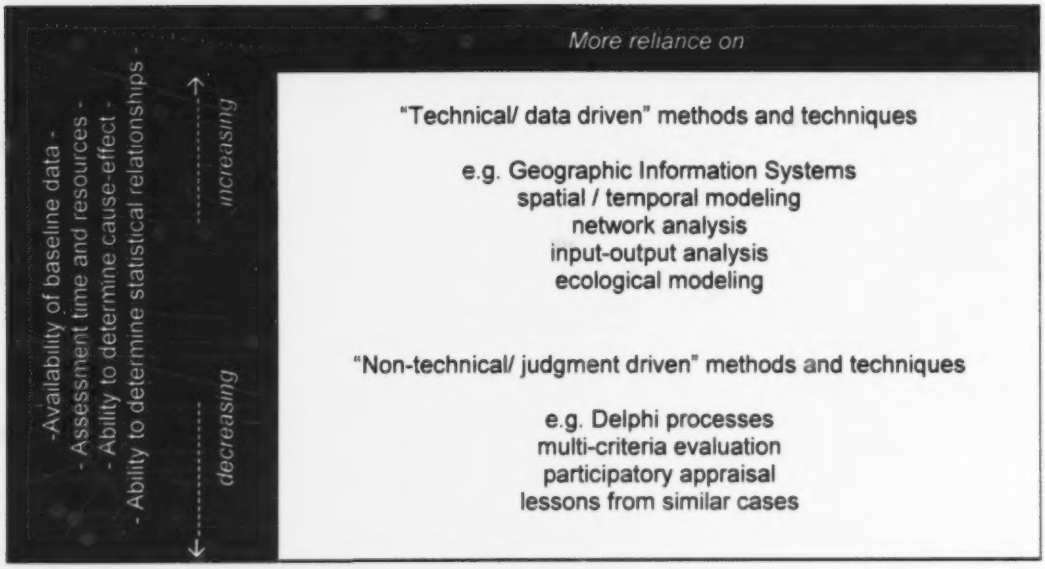

Figure 4. Selecting appropriate methods and techniques in R-SEA

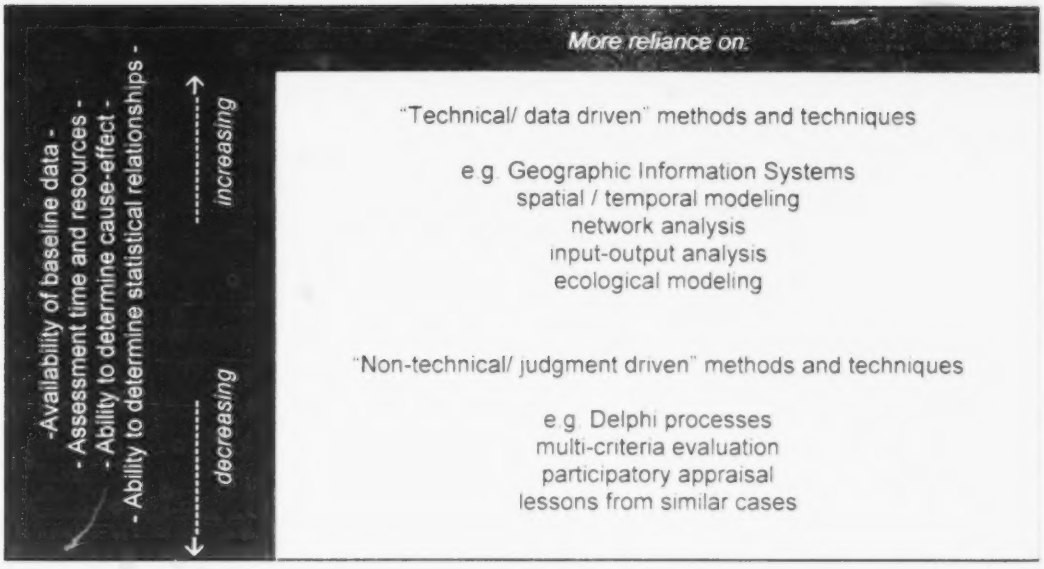

Figure 4. Selecting appropriate methods and techniques in R-SEA

4.6 Phase 6: Identify a Preferred Strategic Alternative

Once the effects or condition changes under each alternative scenario are identified, some evaluation of the implications or significance of that change must be determinedso as to allow identification of a 'preferred' alternative. To select a preferred alternative in R-SEA is to make a strategic choice about the 'desirability' and 'acceptability' of the future state of the region and about the stressors involved, trading off one suite of impacts and condition changes for another (see Rodriguez et al. 2006). In identifying a preferred alternative, consideration should be given to the implications of the cumulative effects or outcomes identified under each future scenario. Attention should focus on systematically evaluating and comparing the cumulative effects and outcomes of scenarios, including the future baseline scenario, based on a number of agreed upon criteria, including:

- Implications for the sustainability of the affected valued ecosystem components and the regional environment.
- Potential to exacerbate, improve, or forge new regional cumulative impacts or impact pathways.
- Distributional consequences of change under the scenario with regard to social, economic, and cultural effects.
- Consistency and compatibility with broader policy or sustainability initiatives, including public preferences and priorities.

Methods and techniques for comparing and subsequently identifying a preferred alternative, as in other phases, will be selected to best fit the situation at hand.For example, each alternative can be scored or ranked with respect to each individual VEC or impact evaluation criterion to systematically compare the relative merits of each alternative on, for example, achieving biodiversity conservation or broader sustainability goals and objectives. Output can be presented in terms of a one- or multi-dimensional order or ranking of alternatives and tested to sensitivity to changing conditions (see Noble 2002). In other cases, public forms and collaborative decision making processes may be deemed more suitable. No one set of methods and techniques will apply to all strategic actions in all socio-political contexts; rather skillful selections must be made from the array of tools that are available based on the circumstances at hand (Brown and Therivel 2000).

Arriving at a preferred alternative is a 'boundedly rational' process that must acknowledge uncertainty (Kørnøv and Thissen 2001; Noble and Storey 2001; Perdicoúlis et al. 2007), and make explicit any decisions related to impact tradeoffs.The preferred alternative represents an overall sense of direction based on the competing alternatives and possible scenarios and evaluative criteria under consideration. Phase 6 may not necessarily result in one scenario that stands out significantly in relation to the others. Or, another alternative may perhaps seem more preferable once certain mitigation is considered (see *Phase 7*).Acknowledging this, there may be several iterations between Phases 6 and 7.

Implications for the sustainability of the affected valued ecosystem components and the regional environment: In order to arrive at a preferred alternative, the implications or the significance of the effects under each scenario must be evaluated. Central to alternative selection is the consideration of the implications of each scenario for the sustainability of the affected VECs. As indicated under Phase 2, scoping the regional baseline, VECs are centre stage in R-SEA; thus, identifying the implications of each scenario for VECsustainability is central to the selection of a preferred alternative.

In doing so, it is important to consider how different VECs may be affected differently under each scenario. For example, consideration should be given to the distribution of effects with regard to the sensitivity of the affected VEC, its vulnerability,or irreplacability. Scenarios that generate more (undesirable) effects on highly vulnerable or irreplaceable VECs, for example, such as a rare or endangered species or highly sensitive cultural areas, are likely to be considered less desirable. Similarly, effects on VECs or changes inVEC indicators that are deemed to be of public concern or of particular value to ecological function are likely to be significant.

Emphasis should be placed on evaluating the implications of the cumulative effects associated with each scenario with regard to enhancing the sustainability of VECs; minimizing potentially adverse effects on VECs; and reducing the risk to potentially vulnerable VECs. It is also necessary to consider the extent to which any VECthresholds are exceeded,as defined during the baseline phase or byexisting regulations and guidance for the region.Groffman et al. (2006) provide methods for identifying and investigating thresholds.

Potential to exacerbate, improve, or forge new regional cumulative impacts or impact pathways: An evaluation of impacts in R-SEA must give due course to consideration of impacts upon existing pathways of cumulative change. A good question to lead with is "What is the potential for each alternative to amplify or subdue existing regional feedback cycles?" In particular, it is important to consider impacts that may result from synergistic effects; sequential effects (second-order, third-order, etc.); indirect and surprise effects; and effects of an incremental nature, because these are the effects that are not addressed through project EIA. R-SEA is arguably the only assessment opportunity to seriously and effectively consider these less-direct, but critically important, types of impacts. Analysis of change dynamics or effects pathways will also shed light on the impacts of each scenario. Questions of this nature include: Will this alternative violate the assimilative capacity of the region? To what extent may impacts be displaced through space or time? What is the potential for an alternative to forge new pathways of change or cause an established system to cross an ecological threshold or "flip" into an undesired state?

Distributional consequences of change under the scenario with regard to social, economic, and cultural effects: In the past, EA has focused on predicting effects and environmental impacts, but has stopped short of investigating the distributional consequences of change (see Connelly and Richardson 2005; Tollefson and Wipond 1998). R-SEA provides an opportunity to consider who it is that experiences or absorbs impacts, both good and bad. Who benefits from regional change, and who does not?

Many of the long-standing issues in a region, the types of issues that are eventually vetted through project-EIA, are issues related to perceived or real inequities in terms of access to, protection of, and participation in the development of regional resources. The broader social, cultural, economic, and health implications of each alternative may be interpreted as "impacts," and may render an alternative more or less desirable.

Consistency and compatibility with broader policy or sustainability initiatives, including public preferences and priorities: Referring back to the information gathered for the R-SEAreference framework (*Phase 1*), it is important to determine whether the priorities or higher-order or parallel policy objectives are at odds with, or support the range of alternative scenarios under consideration. At the strategic tier of assessment, it is important to gauge the consistency of each alternative and future scenario with broader regional, provincial/territorial and national sustainability goals and objectives, and with existing institutional arrangements and PPP initiatives in the region.

4.7 Phase 7: IdentifyMitigationNeeds and Management Actions

Alternative scenarios may, to varying degrees, consider mitigation and management actions as part of the scenario itself. However, it is also important to consider the merits and demerits of each alternative scenario independent of any proposed mitigation and management actions, which may or may not be implemented. The preferred alternative provides an overall sense of direction based on the range of possible alternatives and their associated likely futures and impacts. However, even the preferred alternativemay result in some potentially adverse environmental effectsthat need to be mitigated. As such, the final choice of a preferred alternative demands some explicit consideration of:

- Mitigation requirements and residual effects of the preferred alternative scenario(s).
- Management actions and resources required for implementation or environmental safeguarding.

Identifying the preferred alternative is an iterative process and a final decision cannot be made until consideration is given to the impact management and mitigation needs of the identified option, and the viability of its implementation in light of the resources required and feasibility of those management and mitigation needs. Two critical questions should be asked: Are the required impact management and mitigation measures both acceptable and feasible? Is there a supporting environment for the strategy or PPP? The final selection of a preferred alternative may thus require revisiting the alternatives, or even variations of the proposed set of alternatives, and reconsidering the implications of change and cumulative effects under each scenario, mitigation needs, and institutional requirements and capacities, until a decision can be reached and an alternative identified.

Good-practice Guidance

Mitigation requirements and residual effects of the preferred alternative scenario(s): Even a preferred alternativemay result in some potentially adverse environmental effects that need to be mitigated. As such, the need for and types of mitigation should be identified and prescribed and the residual effects identified. There is a hierarchy of mitigation options that should be considered for mitigating potentially adverse effects, commencing with impact avoidance (Glasson et al. 1999). If an impact can be avoided, then costly reclamation or compensation initiatives are also avoided. Impact avoidance may involve certain actions such as designating 'exclusion zones' for highly sensitive regions where no further development is to occur, or identifying 'best management practices' to minimize further impacts of change in those areas where development may already exist. The last resort, after all management options have been exhausted, is to provide some form of compensation. This may include, for example, financial compensation to affected communities or industries, or restoration of land and conditions elsewhere so as to maintain a "no net loss" policy

There are several EIA-type methods available to help organize this information in a coherent way in support of mitigation decisions, including a simple Sorensen network (Figure 5). The objective is to identify the range of mitigation actions that would be required under each scenario, and then to evaluate the merits and demerits of the proceeding based on potential residual effects following mitigation, the available resources and capacity to undertake such mitigation actions, and the relative attractiveness of other, competing alternatives in light of the mitigation requirements.

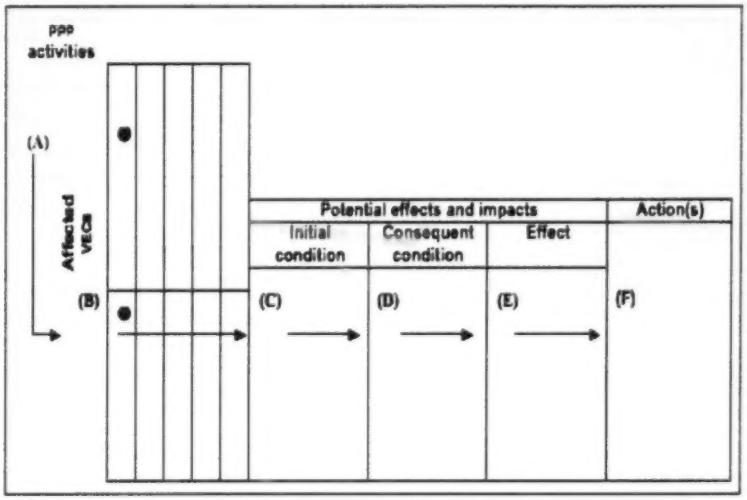

Figure 5. Sorensen network (from Noble 2006)

Management actions and resources required for implementation or environmental safeguarding: Certain management actions or prescriptions to the existing environment, biophysical and human, may also be needed in order to move the preferred option forward to the implementation phase. Consideration should be given to whether there exists a supportive environment for implementation of the preferred alternative or PPP. Implementation, as well as the attractiveness of an alternative or PPP, will depend in large part on ensuring the appropriate conditions for implementation success. Supporting institutional environments may need to be establishedso as to ensure that the preferred strategy can succeed, or certain conditions may require management action in order for the preferred strategy to be considered a viable one.For example, new management frameworks or implementing agencies may need to be established, or current land use or other conflicts in the region may need to be addressed. The extent to which management actions and resources are required, the availability of resources, and the capacity to move forward are thus important considerations in selecting a preferred alternative.

4.8 Phase 8: Develop a Follow-up and Monitoring Program

Follow-up is an umbrella term referring to the variety of activities that take place after the approval of a strategy or PPP, including post-decision effects monitoring; performance evaluation of the strategy or PPP in question; and feedback, managementand communication.Follow-up is essentialin R-SEAbecause strategic alternatives are often formulated under considerable uncertainties, are potentially large in the scope of their impacts, and are sensitive to changes in broader social and economic conditions(Cherp *et al.* 2008; Persson and Nilsson 2007).

The concept of follow-up is not new, but it is only recently that follow-up has received attention above the project tier. Most current thinking on strategic-level follow-up has borrowed heavily from that of project-based EA(Persson and Nilsson 2007). In principle, the rationales for follow-up at the strategic tier are generally the same as of those at the project level: derived from the notions of uncertainty and risk associated with decision making based on ex ante evaluation (ODPM 2005; Harrop and Nixon 1999). The overall objectives of follow-up in R-SEA are to understand outcomes of decision taking, and to enable and actively encourage ongoing refinement and improvement of both the strategic alternative and related environmental management actions.

Aneffective R-SEAfollow-up program is one that is based on:

- Post-decision effects monitoring of valued ecosystem components and associated indicators.
- Performance evaluation of the strategy and its associated mitigation and management actions based on established ecosystem thresholds, targets, maximum effects levels, and various policy or performance goals and objectives that may have been identified.
- Reporting of the monitoring results and of the strategy's performance to the public.

Enabling this to happen requires attention to:

- Roles and stakes in follow-up and monitoring.
- Requirements and procedures for data management.

Good-practice Guidance

Post-decision effects monitoring of valued ecosystem components and associated indicators: This is the 'change assessment' component of follow-up and monitoring referred to in Phase 2 (baseline), and involves developing a monitoring program for assessing changes in VECs and/ or VEC indicatorsover space and time.Similar to the scoping phase of R-SEA, not all aspects of the regional environment need to be monitored and followed-up. Rather, attention should focus on those VECs that are of most concern and for which their indicators are 'measurable' or comparable over either space or time. Ideally, the VECs to be monitored are the best indicators of overall cumulative environmental change. Further, it is important that those 'regional VECs' or indicators

identified for monitoring can be sufficiently 'unrolled' (e.g. 'biodiversity' → 'species guilds' → 'indicator species'). In this way, follow-up and monitoring programs at the regional scale are capable of integrating project-specific monitoring programs and results in determining the overall cumulative state of the regional environment. In other words, monitoring in R-SEAshould address both 'coarse' and 'fine-filtered' processes so as to be relevant to overall regional change but also not to miss individual, or incremental changes and stressors that might be driving that change (see Therivel and Ross 2007).

The scope of VEC monitoring programs will in large part be determined by the specific objectives of the follow-up program; however, consideration should be given to both biophysical and human VECs, how the strategy may affect social or cultural variables and, in turn, how social and cultural change plays out on the regional environmental landscape. Due to the complexity of pathways that link strategic initiatives to social and other human environmental change, the monitoring of social and other VECs of the human environment is often best suited to 'issues-based' monitoring than it is to quantification of indicators and thresholds (Noble and Storey 2005).

Performance evaluation of the alternative: In addition to effects monitoring or change assessment, there is a need to develop follow-up programs for performance evaluation. Performance evaluation requires:

- the evaluation of VEC and VEC-indicator monitoring results in order to determinecompliance with, or distance to or from, the various thresholds, targets, and MAELs identified during the baseline assessment (Phase 2);
- the evaluation of VEC and VEC-indicator monitoring results in order to determinethe effectiveness of mitigation measures and best management practices.
- the overall performance of the strategic alternativewith regard to its stage of implementation, specified targets and objectives,and whether what was said would be done is actually done; and
- checking on the conformance of subsequent actions (e.g. projects) with the strategic alternative and R-SEA (see Partidario and Fischer 2004; Partidario and Arts 2005).

Reporting of the monitoring results and of the strategy's performance to the public:A program for reporting monitoring and follow-up results should also be established in order to inform the public on policy, plan or program performance and on the follow-up and monitoring results themselves. Reporting of follow-up and monitoring results, including any subsequent management actions, is important not only to educate the public and to gauge changing public values and expectations, but also to ensure transparency and accountability andtoenhance the overall credibility of a the strategic initiative.

Roles and stakes in follow-up and monitoring: For each of the identified VECs or indicators, monitoring and reporting roles and responsibilities must be identified. Monitoring of economic, social, or community health may or may not be beyond the scope of the environment agency tasked with undertaking the R-SEA. Thus, some consideration must be given to who will collect monitoring data and also who will use that data. In some instances, for example, monitoring responsibilities may be shared amongst government agencies, project proponents, environmental non-government organizations,

and communities. Regardless of the source of monitoring data, those data must be sufficiently reliable to be used at the regional scale. At the same time, if regionally based state-of-the-environment monitoring data are being collected by a government agency or independent environmental monitoring organization, then consideration must be given as to whether that data are useful to inform the R-SEA, and/or subsequent site-specific project EIA and decision-making.

Requirements and procedures for data management: Given the multiple roles and stakes in R-SEA follow-up, there is a need for continuity and congruence in monitoring methods and data collection and manipulation procedures, as well as a centralized point for data storage and access. Continuity and congruence are necessary to ensure that monitoring data are quality controlled, transferable and comparable. Failure to achieve this may lead to problems in comparing monitoring results and in evaluating the overall effectiveness of the strategy, PPP, or management measures, and in facilitating decisions about project developments and cumulative environmental effects. Continuity and congruence in data, and even the availability of data, are major challenges is many regions, but one that is slowly being addressed outside the R-SEA process through a number of science-based programs including Canada's tri-council granting agencies' Networks of Centres of Excellence program.

4.9 Phase 9: Implement the Strategy and Monitor

Even the most well-intended strategies are of little value if they are not implemented. There are two broad approaches to implementation, a programmed approach and an explicitly adaptive one. *Programmed implementation* is based on the notion that the difficulties and challenges of implementing a new strategy or PPP are managed most effectively by developing rigid, pre-programmed procedures for implementation. *Adaptive implementation* is based on the notion that clarity of goals and objectives is important, but if goals and objectives (or even the strategy or PPP itself) are too rigid they may not adequately respond to new challenges or information that might emerge during the implementation period. Under this approach the implementation of strategies and PPPs is seen as an adaptive process, flexible to changing circumstances as new issues, data and knowledge emerge.

There is no single best implementation style; rather implementation depends on the environment within which the strategy or R-SEA is being implemented (Table 7). Generally speaking, however, the more complex the strategy or PPP, and the greater the uncertainty or potential conflict involved, the more preferred is an adaptive approach. At the strategic tier, it is important to be realistic about the limitations and uncertainties in looking to the future and in developing blueprint implementation and management strategies. R-SEA implementation, including the strategy or PPP itself and its associated management actions, must be sufficiently adaptive to system changes, bifurcation, external and emergent stressors, and responsive to new knowledge gained through monitoring and follow-up processes (Cherp et al. 2007; Noble 2000b).

Table 7. Adaptive versus programmed approaches to alternative or PPP implementation

	strategy or PPP environmental context	
guidelines	*structured*	*unstructured*
scope of change	incremental	major
certainty in strategy, technology or management	certain within risk	uncertain
conflict over goals and means	low conflict	high conflict
structure of institutional setting	tightly coupled	loosely coupled
stability of environment	stable	unstable
Preferred implementation style	*Programmed*	*Adaptive*

Source: Based on Berman (1980), from Mitchell (2002)

In order to facilitate implementation and to enhance the potential for success and acceptability of the preferred strategic alternative, there is a need to:

- Finalize roles and resources for implementation.
- Undertake a formal public review process of the proposed strategy.
- Establish a regular review period.

Finalize roles and resources for implementation: Roles and responsibilities for R-SEA were identified at the outset of the process, during the development of the reference framework, and refined as the R-SEA process unfolded. At this stage of the process, roles and responsibilities to facilitate implementation must be finalized and the resources (financial, technical, human, institutional, and political) secured.

It is very likely that the implementation of a strategic initiative or PPP will require a level of cooperation and commitment that extends well beyond the reach and authority of the organization or agency commissioned with the responsibility to carry out the R-SEA in the first place. For example, an environment agency may be tasked with the responsibility for an R-SEA, but many of the political, financial, and institutional decisions and resources required to implement and sustain the resulting strategy or PPP are beyond the scope and capacity of the environment agency and require commitment and support from various other agencies and departments, such as energy, transportation, fish and wildlife, and those responsible for economic policy and development. In many instances, given the spatial scale that may accompany R-SEA, implementation will demand strategic partnerships between different levels of government or between provinces and other jurisdictions.

Successful implementation demands a level of commitment and collaboration that is not common in project-based EA. In absence of such commitment and collaboration, the output of R-SEA, regardless of how methodologically sound the processis, will result in less-than-effective strategic initiatives or, even worse, pure rhetoric without action. In other words, the "tiering" of R-SEA to horizontal and hierarchical PPPs and initiatives will be difficult to achieve unless seriously pursued. As a result, downstream project and development activities may still unfold in absence of any real strategic guidance, and existing projects and initiatives will continue to operate in isolation of the framework necessary to better understand and manage cumulative environmental change at the regional scale.

Undertake a formal public review process of the proposed strategy: In order to maximize R-SEA influence on a final decision, and to reduce any conflict at the stage of implementation, a public review and feedback process is an important component of the pre-implementation stage. Public review and feedback is an iterative process and provisions must be made in the timeline of implementation to allow for public response and any further modifications to the strategy, PPP, or its follow-up and mitigation program that may be required. In those cases where the same authority is responsible for both the R-SEA and final adoption and implementation of the strategic initiative or PPP, an additional review by external experts is particularly desirable (von Seht 1999).

Following public and/or expert review, a summary of responses alongside the updated strategy or modified PPP should once again be released to the public prior to its implementation. In those cases where a decision is made not to adopt public or expert recommended modifications to the strategy, PPP or to its component parts, a "reason for decision" statement should be issued with the final strategy or PPP. This approach provides for openness and accountability in the R-SEA and implementation process, and demonstrates that the views of the affected parties are taken seriously and integrated, where possible, in the final design of the strategic initiative or PPP (von Seht 1999).

By integrating public values and concerns earlier in the R-SEA process, however, lengthy public reviews and costly delays can be avoided at the implementation stage (Noble 2004).

Establish a regular review period: Once the strategic initiative or PPP and its follow-up and monitoring programs are implemented, preparation should begin for the next iteration of the R-SEA process or systematic review of the initiative orPPP. Conceptualizing the initiative as design, or experiment, and expecting to modify it based on knowledge gained and changing events is central the success of the initiative (Noble 2000). Minor adjustments to strategy will occur on an ongoing basis as new knowledge is gained; this is inherent to the follow-up and learning process. Such adjustments may occur on a regular basis, or annually depending on the specific context and nature of the monitoring and follow-up program. However, consideration should also be given to a more comprehensive review of the overall effectiveness of the strategy or PPP. Such a review, which may occur on a regular 3, 5, or 10-year basis depending on the horizon of the strategy or PPP, will revisit initial goals and objectives, take stock of changing priorities, and consider whether a major restructuring and re-assessment are required in light of the overall effectiveness of the initiative and new baseline conditions.

5.0 DOCUMENTATION AND REPORTING

Transparency and accountability are important to a credible R-SEA process.Transparency and accountability provide greater potential to: improve public trust in the planning and decision making process; enhance the overall credibility of a strategic initiative, policy, plan, or program; avoid or minimize costly delays and confrontations due to public opposition throughout the R-SEA process, and during the implementation of the strategic initiative; mobilize resources and public support for implementation. Ensuring transparency and accountability requires not only public participation early on and throughout the R-SEA process, but also documentation and reporting of both the R-SEA process and its outcomes.

Documentation and reporting throughout the R-SEA process is important in order to: demonstrate how public input affected major decisions; explain how decisions were taken during the R-SEA process; report on the performance of the strategic initiative, policy, plan, or program, following implementation.

Documentation and reporting will vary depending on the nature and scope of the R-SEA application; however, good practice guidance for environmental assessment suggests that, at a minimum, the following documents be prepared and made available to the public for review and/ or comment:

i. The Terms of Reference for the R-SEA.

ii. An Environmental Report that provides a written record of the entire R-SEA process and results, from regional baseline scoping to the follow-up and monitoring program.

iii. An Environmental Statement, prepared after a decision is made on the preferred alternative, to inform the public on the decision; to document how public concerns and other factors were taken into consideration in making the decision; and to present the plan for implementation.

iv. Progress and Performance Reports following implementation of the preferred alternative to inform the public on policy, plan or program performance and on follow-up and monitoring results.

It is recommended that successive public communications be produced over the life of the R-SEA process to keep the public informed as the process unfolds. The extent of on-going reporting will vary depending on the level of public interest and should be guided by the elements of successful and meaningful public participation programs identified above.

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